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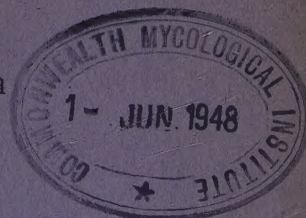
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[No. 4.]

DISEASES CAUSED BY BACTERIA AND FUNGI

PETTERSSON, A. (1946.) Die Immunotherapie bei Staphylokokkenkrankheiten. [**The immunotherapy of staphylococcal diseases.**]—*Acta path. microbiol. scand.* **23.** 164-169. [In German.] **636**

The clear oedematous fluid which follows subcutaneous or the pleural effusion which follows intrapleural injection of staphylococci both inhibit phagocytosis, but P. found that if a sufficient number of leucocytes from the same species are injected with the virulent staphylococci the resultant fluid is turbid with leucocytes, there is active phagocytosis and animals so treated have a high degree of immunity. Heat-treated vaccines are unsatisfactory immunizing agents, but staphylococci treated with acetone and finally killed with 1:300-500 formaldehyde set up satisfactory immunity.—A. MAYR-HARTING.

HALE, J. H. (1947.) Studies on staphylococcus mutation: characteristics of the "G" (gonidial) variant and factors concerned in its production.—*Brit. J. exp. Path.* **28.** 202-210. **637**

By growing staphylococci in broth containing barium chloride, or on plates containing gentian violet, H. produced a "G" variant which appeared at a frequency of 1 in 50,000 cocci in the inoculum. The variant maintained its characteristics on further cultivation on ordinary medium, but occasional colonies reverted to the original type. The characters of the "G" variant compared with the parent strain, were slower growth, smaller colony, lower heat and penicillin resistance, little saccharolytic activity, no haemolytic activity and slight coagulase production. When grown on plates along with colonies of the parent staphylococcus the variant showed satellitism. Growth occurred more readily on crowded portions of plates sown with the variant than on more sparsely seeded portions. On media containing yeast extracts the variant gave rise to colonies resembling the parent strain.

H. argues that the "G" variant has a lower metabolic rate than the parent strain and has

greatly reduced powers of producing the metabolites necessary for rapid growth. These are present in the media surrounding colonies of the parent strain and also in yeast extracts.—A. F.

PANIZZI, E. (1942.) Il tropismo dello stafilococco piogene aureo per il tessuto muscolare striato del coniglio. [**The affinity of *Staphylococcus pyogenes aureus* for striated muscle tissue of the rabbit.**]—*G. Batt. Immun.* **28.** 331-345. [English, French & German summaries, abstr. from German summary.] **638**

P. found that after repeated passage *in vivo* in the striated muscle tissue of a rabbit, a strain of *Staph. pyogenes* var. *aureus* showed a pronounced tendency to become localized in that tissue, when introduced intravenously into the animal.

If it was not passaged into the striated muscle tissue, the strain frequently localized in the kidneys, more rarely in the liver, but never in the muscle tissue.

The same strain, repeatedly cultivated *in vitro* in striated muscle tissue cultures, showed analogous properties.—E. V. L.

NUTINI, L. G., KELLY, T. A., & McDOWELL, M. A. (1947.) The effect of *Streptococcus pyogenes* extracts and filtrates on various bacteria.—*J. Bact.* **53.** 575-580. [Authors' summary copied *verbatim*.] **639**

Protein-free alcoholic extracts and untreated filtrates of the media in which *Streptococcus pyogenes* was grown were prepared and tested for effects on the growth of *Staphylococcus aureus*, *Escherichia coli*, *Shigella dysenteriae*, *Aerobacter aerogenes*, and *Streptococcus pyogenes*.

The alcoholic extracts of *Streptococcus pyogenes* cells in various concentrations were tested for effect on the growth of the foregoing bacteria as well as on *Diplococcus pneumoniae*, *Salmonella paratyphi*, *Salmonella enteritidis*, *Eberthella typhosa*, *Bacillus subtilis*, and *Corynebacterium diphtheriae*.

In general, the growth of gram-negative organisms, except *Eberthella typhosa*, was inhibited by the alcoholic cellular extract, and all of the

gram-positive bacteria with the exception of *Diplococcus pneumoniae*, type I, were stimulated by this extract.

The extracts and filtrates of the media in which *Streptococcus pyogenes* was grown produced predominantly inhibitory effects. *Streptococcus pyogenes*, however, was stimulated greatly by all the preparations except the extract of the broth media of the 48-hour ultraviolet-irradiated culture of *Streptococcus pyogenes*, which produced an inhibition of growth at the lowest and highest concentrations.

NETTO, F. A. (1944.) A frequência da tuberculose no gado leiteiro e sua erradicação. [Incidence of tuberculosis in dairy cattle, and its eradication.]—*Bol. Soc. paulista Med. vet.* 6. 3-21. [English summary.] 640

This is a general article dealing with the distribution of TB. in animals throughout the world, and the measures for its eradication. In São Paulo itself the percentage of tuberculosis in cattle is quite low, and in swine rather higher.

—I. W. JENNINGS.

CORPER, H. J., & COHN, M. L. (1946.) The tubercle bacillus and fundamental chemotherapeutic and antibiotic action.—*Yale J. Biol. Med.* 19. 1-22. 641

Though streptomycin is capable of retarding the growth of human type tubercle bacilli *in vitro* and *in vivo*, its clinical application is rendered less satisfactory because an effective level of the substance in the blood can be maintained only for brief periods, owing to the rapidity with which it is excreted. Streptomycin has little bactericidal activity, being active by reason of its interference with the development of the tubercle bacilli. Since in human clinical TB. the organism develops at irregular and undetermined intervals it is difficult to determine the time for application of a retarding substance.—R. MARSHALL.

VOLTERRANI, A. (1942.) Il bacillo tubercolare di tipo bovino possiede un tropismo per il rene? [Has *Mycobact. tuberculosis* var. *bovinus* an affinity for the kidney?]—*G. Batt. Immun.* 28. 320-330. [Abst. from English, French & German summaries.] 642

Experiments on rabbits, g. pigs and mice did not give an indication that repeated passage through the kidneys causes bovine type tubercle bacilli to have predilection for that organ, but in one experiment in rabbits the strain caused more severe kidney lesions after such passage.—E. V. L.

BARGER, J. A. (1947.) Avian-swine tuberculosis project in Iowa progress report.—*Iowa Vet.* 18. 23-24. 643

The total population is estimated at 80 million. In 1936 69.79% of the flocks were

infected with TB., 16.9% of the birds being infected. In 1946 this had been reduced to 9.39% and 4.72% respectively. Infected swine, assumed to be infected with avian type were 15.4% in 1936 and 7.8% in 1946. The improvement is largely attributable to the introduction of the "all pullet" flock system, which now covers 93% of the flocks. The remaining 7% are pedigree breeders who normally practice good sanitation, etc. The considerable publicity given to the losses from avian TB. has helped in its reduction.—R. MACGREGOR.

OLSON, B. J., HABEL, K., & PIGGOTT, W. R. (1947.) A comparative study of live and killed vaccines in experimental tuberculosis.—*Publ. Hlth Rep., Wash.* 62. 293-296. [Authors' conclusions slightly amended.] 644

A killed vaccine prepared by ultraviolet irradiation of virulent tubercle bacilli (strain 199-RB) with the Oppenheimer-Levinson apparatus and administered in three doses was equal in effectiveness to a single dose of live BCG and was more effective than three doses of the latter against a massive dose of virulent tubercle bacilli (199-RB) in guinea pigs. The ultraviolet-killed bacilli of the virulent strain made a more effective vaccine against this strain than the same virulent strain heat-killed or ultraviolet-killed BCG.

Inasmuch as in this initial work the effectiveness of the ultraviolet-killed virulent strain was demonstrated by challenge with its homologous strain, further work is in progress to test its effectiveness against heterologous virulent strains. The comparative antigenicity of other virulent strains is also under study.

WILLISTON, E. H., & YOUNG, G. P. (1947.) Streptomycin resistant strains of tubercle bacilli. Production of streptomycin resistance *in vitro*.—*Amer. Rev. Tuberc.* 55. 536-539. [Spanish summary. Authors' summary copied verbatim.] 645

Fourteen out of 18 strains of *M. tuberculosis* developed definite resistance to streptomycin when cultured for successive generations in synthetic broth with plasma and streptomycin. Three strains showed only a fourfold increase in resistance, and one only twofold. There was a wide variation in the rate at which the resistance developed. Nine strains showed at least a thousandfold increase in resistance after from 52 to 120 days' exposure; other strains showed less increase of resistance. Resistance was maintained for as long as eleven months.

WOLF, S. (1940.) Prinos poznavanju uloge kože kod infekcije bedrenicom, kolerom peradi i vrbancem. [Role of the skin in anthrax, fowl cholera and swine erysipilas.]—*Vet. Arhiv.*

10. 541-550. [Abst. from German summary.] 646

In the experiments the inoculations were done so as to avoid contact between inoculum and skin and so that any possible reactions at the point of injection which might inhibit growth and penetration of the bacteria into the organism were prevented. 15 g. pigs inoculated i.m., and 7 i.c., with *B. anthracis*, all died. Fourteen out of 20 infected intraperitoneally also died. Five rabbits infected intramuscularly, and three intracutaneously, all died. *B. anthracis* was found in all dead animals.

Fifteen pigeons infected intramuscularly and seven intracutaneously with *Pasteurella avisepticum* all died. 12 out of 15 pigeons infected intramuscularly with *Erysipelothrix rhusiopathiae* died. All nine infected intracutaneously died. The bacteria were found in all dead birds. Paths of infection in these injections are discussed.—K. J. S.

GERBER, I. E., & GROSS, M. (1946.) **Inhibition of growth of *Mycobacterium tuberculosis* by a mold product—the effect on pathogenic human tubercle bacilli.**—*Science*. 103. 167-169. 647

In a previous paper a mould product, called mycoidin, was described which inhibited the growth of a nonpathogenic strain of *Mycobact. tuberculosis*. The authors now report that mycoidin is both bacteriostatic and bactericidal for virulent human tubercle bacilli. The two human strains employed in the investigation proved to be twice as sensitive as the previously examined non-pathogenic strain against the mould product.

—E. KLIENEGER-NOBEL.

GELLERSTEDT, N. (1944.) **On an isolated tubercloid form of skin-granuloma, caused by atypical, acid-fast bacilli.**—*Acta path. microbiol. scand.* Suppl. No. 54. pp. 574-606. [In English.] 648

Seven cases of a benign tuberculoid, bacillary lesion are recorded, not, apparently, previously described in man; four cases occurred in children and three in adults. The lesion commenced as a skin nodule, boil or circumscribed swelling which soon ulcerated. In six cases, regional lymphadenitis ensued. "The skin-ulcer was roughly circular, varied from the size of a shilling and that of the palm of a hand, had a discharging base, either necrotic or covered with granulations, while the surrounding skin was reddish or cyanotic, and the edges were somewhat undermined." There were no signs of the disease spreading beyond the primary ulcer and the regional lymph nodes. In the case of three patients, there was no known exposure to tuberculosis; in one, tuberculosis occurred in the family, but there was no certain knowledge of contact; in the other

three, such data was not available. In six of the cases, physical examination of the lungs was negative; in all seven, skiagrams of the lungs were tuberculosis negative, although five showed a certain enlargement of the hilar regions, sometimes accompanied by calcification. There was in fact no evidence to suggest that the skin lesion was secondary to a more deep seated one.

Microscopically the lesions were similar to those of the lesions of "so-called skin tuberculosis in cattle". Cultural and animal inoculation tests were performed in two of the cases, but with negative results.—L. M. MARKSON.

PELLERAT, J., & MURET, M. (1944.) **Variations de l'histamine cutanée et cuti-réactions à la tuberculine. [The rôle of histamine in the cutaneous reaction to tuberculin.]**—*C. R. Soc. Biol. Paris*. 138. 574-575. 649

In observations on seven patients with skin tuberculosis it was found that the percentage of histamine in the skin was reduced at the site of a cutaneous reaction to tuberculin.—E. K.-N.

BATTELLI, C., & COCEANI, A. (1946.) **Di una particolare forma morbosa del cavallo sostenuta dallo di Preisz-Nocard. [Corynebacterium ovis infection in horses in Eritrea.]**—*Boll. Soc. ital. Med. Igiene trop.* 6. 3-31. Abst. from English summary.] 650

The authors described four cases of *Corynebact. ovis* infection in horses in Eritrea. Chemical characteristics, differential diagnosis and treatment are described.

They discuss the pathology of the infection in horses.—F. E. W.

STAMP, J. T., & WATT, J. A. (1947.) **Polyarthritis in lambs.**—*Vet. Rec.* 59. 30. 651

This is stated to be the first record in Scotland of polyarthritis in lambs due to *Erysipelothrix rhusiopathiae*. Two outbreaks were encountered in widely separated farms in the Borders. The sheep-farming in both instances was based on arable land; in neither case was there contact with pigs. In one case ulcerative endocarditis was also present. The incidence was about 10%.

—A. FOGGIE.

FEENSTRA, E. S., & THORP, F., Jr. (1946.) **Bacteriopathology of infectious bovine pyelonephritis.**—*Amer. J. vet. Res.* 7. 432-436. 652

In the sections examined the location of the organisms (*Corynebacterium renale* the reputed causal agent) was found to vary in different cases. In the milder cases they were apparently present only in the cellular debris of the renal calyces, the ureter, and the vesicular mucosa. In the more severe cases they might be found also in discrete renal foci. Sometimes, too, they were present in the tubules and in the necrotic tubular epithelium,

In the characteristic lesion, they were situated in cellular debris which was flanked by a zone of necrosis and, beyond that, by a zone showing chronic inflammatory changes.—L. M. MARKSON.

DE BLIECK, L., & JANSEN, J. (1946.) Vlekziekte—trypaflavin—vaccin. [**Trypaflavine vaccine for swine erysipelas.**]—*Tijdschr. Diergeneesk.* 71. 804–807. [Abst. from English summary.] 653

This vaccine as prepared by Kardo (1935), has been used successfully in Switzerland and Scandinavia. Good results were obtained with mice. In a first experiment carried out on mice by de B. 13 controls all died, and of 14 vaccinated and submitted to a test of resultant immunity two died; in a second experiment ten controls all died, of nine vaccinated and tested none died.

In a test on pigs, two were inoculated and one left as a control; the latter developed fever and skin lesions when given the test dose and the vaccinated pigs remained healthy.—E. V. L.

JANSEN, J., & PEPERKAMP, C. W. A. N. (1947.) Listerelosis bij de zilvervos. [**Listerella (Erysipelothrix monocytogenes) infection in a silver fox.**]—*Tijdschr. Diergeneesk.* 72. 319–321. [Abst. from English summary.] 654

A record of *Erysipelothrix monocytogenes* infection in a silver fox. The illness had been diagnosed as distemper.—E. V. L.

SMITH, D. F. G. (1947.) **Haemorrhagic septicaemia.**—*Vet. Rec.* 59. 382. 655

S. describes an unusual manifestation of haemorrhagic septicaemia in dairy buffaloes in India. In an outbreak involving nine animals seven developed enormous swellings of the external genitalia. The swellings were tense and painful and oozed quantities of exudate rich in pasteurella organisms.—D. LUKE.

PACKER, R. A., & MERCHANT, I. A. (1946.) **Bovine mastitis caused by pasteurellae.**—*N. Amer. Vet.* 27. 496–498. 656

The authors give a brief account of nine cases of mastitis in which pasteurella organisms were isolated, and discuss their significance.

In seven out of nine cases organisms typical of *Past. multocida* Group II were present. There was evidence of transmission of the infection from one quarter to another. Two cases occurred in the same herd one month apart. In one instance four calves were allowed to suckle the affected cow and all died in four days.—D. LUKE.

JAMIESON, S., & SOLTYS, M. A. (1947.) **Infectious epididymo-orchitis of rams associated with Pasteurella pseudotuberculosis.**—*Vet. Rec.* 59. 351–353. 657

A clinical description is given of an outbreak of epididymo-orchitis which affected ten rams of

a flock of 200, some being fatal. In rams which survived there was marked enlargement of the affected testicle, from which pus discharged through the wall of the scrotum. Originally, only one testicle was involved and, during this phase, an acute systemic reaction occurred; when the condition became chronic, the remaining testicle became affected, without febrile symptoms.

In three rams examined P.M. lesions were confined entirely to the testis and epididymis, in which the tubular structure had been obliterated leaving a soft, fluctuating mass containing large quantities (up to 1 litre) of smooth, greyish, purulent material.

From histological examination, the authors conclude that primary lesions occurred in the epididymis and that the testis became involved later. The authors consider that the organism isolated was *Pasteurella pseudotuberculosis*, and discuss the possibility that the sheep tick, *Ixodes ricinus* was the vector.—G. B. S. HEATH.

TOVAR, R. M. (1945.) Simplificación del medio sólido para cultivo de *Bacterium tularensis*. [**A simplified solid medium for the cultivation of Pasteurella tularensis.**]—*Rev. Inst. Salubr. Enferm. trop.* 6. 181–184. [English summary.] [Abst. from abst. in *Bull. Hyg., Lond.* 21. 467. (1946).] 658

A simpler medium than those described by Francis (1946) is described for use in the preparation of *Brucella (Pasteurella) tularensis* vaccine; it is a liver infusion agar and does not contain blood or blood serum. In tests it was found suitable and antigenic properties of the organisms were retained. The organisms were viable in culture for 30 days at room temperature and for ten months in cold storage.

For isolation of the organisms blood should be added to the medium.

DURANT, A. J., & MCDUGGLE, H. C. (1947.) **Escherichia coli in the blood stream of adult fowls affected with the ocular form of fowl paralysis.**—*Amer. J. vet. Res.* 8. 213–215. 659

Using day-old chicks in transfusion experiments for the transmission of fowl paralysis, a high percentage of chicks receiving blood from five out of 36 fowls affected with ocular lymphomatosis died in from 6–15 days. A strain of *Bacterium coli* was recovered from these chicks and the five donors whose blood has caused mortality, were shown to be carriers of the same organism.

In the affected chicks, constant and uniform lesions were produced in the proventriculus varying from slight to extensive haemorrhages and to ulceration of the mucous surface; in some chicks there were also haemorrhages on the myocardium

and congestion of the liver and spleen.—J. D. B.

STEWART, F. H. (1943.) **A review of some recent work on papillary variation in bacteria and bacterial cytology.**—*J. Hyg., Camb.* 43. 136–141. 660

Bacterial papillae, raised spots appearing on colonies of bacteria on solid media, are daughter colonies possessing some variation of character which in favourable cases allows growth to be continued when the parent has ceased to grow. Such papillary variations are inherited. One particular variation, the ability of *Bact. coli-mutabile* to ferment lactose, is discussed in detail. It is considered that *Bact. paracolon*, *Bact. coli-mutabile* white and *Bact. coli-mutabile* red (lactose fermenting) constitute together a single species with a central unstable white variant between a stable white and a stable red. Variation of white to red takes place on exposure to lactose when the logarithmic phase of growth has ended; it is undecided whether variation is spontaneous, induced or adaptive. White strains do contain lactase and liberate it after death: it is possible that in the white strain the bacterial cell is impermeable to lactose.

It is suggested that daughter colonies might arise as a result of autogamic conjugation (reunion of two nuclei which have divided without separation of their respective cells). Cytological details of this, of *Myxococcus xanthus* and of the nuclear apparatus of bacteria are discussed. Pure lines may be obtained in the coliform group by careful plating.—R. SCARISBRICK.

KNIPSCHILD, H. E. (1946.) **Demonstration of a new thermolabile antigen in the colon group.**—*Acta path. microbiol. scand.* 23. 179–186. [In English, author's summary copied *verbatim*.] 661

As several O-inagglutinable strains of *Bact. coli* are found in which neither A nor L antigens can be demonstrated, the inhibitory effect on the O agglutination in these cases must be due to the presence of a "new" antigen not recognized hitherto. It has been practicable, indeed, in a few cases to demonstrate such an antigen which is found to be thermolabile. It has been designated as a B antigen. Even though the agglutinable and agglutinogenic properties of this antigen are destroyed by heating to 100° [C.], it has not been possible so far to destroy its agglutinin-binding property. So absorption with living, alcohol-treated, hydrochloric acid-treated or boiled homologous cultures (removing the O agglutinins) will necessarily remove also any possible B agglutinin from the serum, and hence the presence of this antigen will usually remain unrecognized. Its demonstration therefore requires a circuitous procedure: absorption of such a serum with

another strain possessing the same O antigen, but deviating serologically from the first strain in the type of the B antigen—or in its complete absence. In this way a serum may be obtained that contains B antibody exclusively. The presence of the B antigen is then demonstrated by agglutination of the corresponding living culture in the serum thus absorbed. It has been possible to demonstrate the presence of B antigens only in rather few strains, as their recognition requires another strain perfectly identical with the first one as far as the O antigen is concerned, but containing no B antigen.

HENNING, M. W., & MCINTOSH, B. M. (1946.) **An outbreak of tendo-vaginitis and bursitis due to *Salmonella Abortus-equi*.**—*J. S. Afr. vet. med. Ass.* 17. 88–91. 662

An outbreak of tendo-vaginitis and bursitis amongst horses and mules in a remount depot is described. An outbreak of infectious equine abortion had occurred during the previous year in which *S. abortus equi* had been isolated. Of 3,600 animals passing through during the period of the bursitis outbreak 27 cases were recognized. All ages, sexes and breeds were affected: debility increased susceptibility. The lungs were sometimes involved in a localized broncho-pneumonia with perhaps a purulent nasal discharge. Abscesses developed in other parts of the body. The joints, tendon sheaths and bursae were hot, tender and swollen with turbid blood-stained flocculent or purulent fluid, usually rich in *S. abortus equi*.

Treatment both surgical and by sulphonamides was unsatisfactory. A suspension in saline of the formalin-killed organism was thought to exert some curative and prophylactic effect. "O" agglutination of the serum to a titre higher than 1:80 was diagnostically useful.—R. SCARISBRICK.

REITLER, R., & MENZEL, R. (1946.) **Some observations on *Salmonella* strains in dogs, mice and ticks.**—*Trans. R. Soc. trop. Med. Hyg.* 39. 523–527. 663

A disease running either a very acute course as a fulminating septicaemia or a more chronic one, with an ill-defined clinical picture, leading finally to severe anaemia and emaciation. The disease in dogs occurred mainly in those living in large groups—in kennels or in communal settlements in Palestine—and in localities where there was tick infestation. It resembled Stuttgart disease to some extent. The incubation period was about two weeks and the duration varied from a week in peracute cases up to periods of two years; in the cases of the latter type relapses and improvement in health occurred intermittently. In the acute cases there was high fever, with tonsillitis, generalized enlargement of the lymph nodes,

enlargement of the spleen, diarrhoea and complete anorexia. In the chronic cases onset tended to be insidious and the clinical manifestations were more varied. There were cutaneous petechiae, and there is a cough, rhinitis, pneumonia in some cases, and sometimes encephalitic or neuritic symptoms. Eye complications might occur. The main features of the acute cases were a feature of the more protracted ones.

From blood cultures of the animals salmonella strains could be isolated. The types found were *S. enteritidis* and a new type with the antigenic formula VI, XIV, XXIV-r-l, 7. The latter type was also found to be responsible for outbreaks amongst white laboratory mice. As the outbreaks amongst dogs coincided with a high tick infestation, some ticks were examined for the presence of salmonella strains. From one tick *S. enteritidis* was isolated and the serum from the convalescent dog from which that tick had been taken agglutinated the strain to a high titre. It seems therefore likely that ticks could transmit the disease in dogs. In the mouse epizootics ticks did not play a role. The sera of a number of dogs gave high agglutination titres with one or the other of the two salmonella strains. The majority of sera, even from dogs with positive blood cultures, showed only low titre.—A. MAYR-HARTING.

WESSELINOFF, W. (1941.) Untersuchungen über Bacterium paratyphi B und Schleissheim bei Tieren. [*Salmonella paratyphi B* and *S. schleissheim* in animals.]—*Zbl. Bakt. I. (Orig.)* 147. 311-317. 664

Bio-chemical and antigenic analysis of a number of strains isolated from meat and sent in as *Salmonella paratyphi B* were carried out to find whether genuine *S. paratyphi B* occurs in domestic animals or whether other salmonella strains, particularly *S. schleissheim* which has a very similar antigenic structure, are mistaken for it. The strains were compared with one old stock strain of *S. paratyphi B* and five strains of *S. paratyphi B* isolated from human cases. Twenty-five strains from slaughtered animals, meat or meat products were found to be genuine *S. paratyphi B*, indistinguishable from the human strains. They were found predominantly in cows, but also in meat from sheep, pigs and in sausages. Only three strains of *S. schleissheim* were found in this series, one each from a horse, a cow, and hen's faeces. Two strains were *S. typhi-murium*.

—A. MAYR-HARTING.

WILSON, J. E. (1947.) The isolation of *S. typhi-murium* from fowls which gave a positive agglutination test with *S. pullorum* antigen.—*Vet. J.* 103. 101-104. 665
S. typhi-murium was isolated from two fowls

which had reacted in routine tests to *S. pullorum* antigen. W. suggests that injection at the chick stage with salmonella other than *S. pullorum* may sometimes cause doubtful reaction to the blood test and may also account for the occurrence of single reactions in flocks which have been free from reactions for several years. The agglutination of *S. pullorum* (Group D) antigen by *S. typhi-murium* (Group B) serum is not discussed as it is to form the basis of a separate paper.

[In the original there is an error, *S. pullorum* being included in Group C. It should, of course, be Group D.]—J. D. BLAXLAND.

JANJATOVIĆ, M. (1940.) Prilog poznavanju saharolipoidnog antigena. (Disertaciona radnja iz god. 1940. [The saccharolipoid antigens.]—*Vet. Arhiv.* 10. 363-377. [Abst. from German summary.] 666

The saccharolipoid antigen was tested using 12 newly isolated strains of *Salmonella cholerae-suis*. M.L.D. for white mice and rabbits was 0.02 ml. and 0.5-0.7 ml. respectively. The serum of white mice immunized with the saccharolipoid antigen developed titres of 1:10,000 to 1:100,000 in precipitin tests and 1:1,280 in agglutination tests. Animals thus immunized develop a relatively weak but definite immunity to *S. cholerae-suis*.

—J. H.

I. BONNEFOI, A., & GRABAR, J. (1946.) Diagnostic biologique des infections a *Salmonella*. I. Le diagnostic sérologique des souches de *Salmonella*. [Typing of salmonella strains. I.]—*Ann. Inst. Pasteur.* 72. 719-744. 667

II. GRABAR, J., & BONNEFOI, A. (1946.) Diagnostic biologique des infections a *Salmonella*. II. Le séro-diagnostic. [Typing of *Salmonella* strains. II.]—*Ibid.* 72. 745-765. 668

I. The authors review the present state of knowledge regarding the serology of the salmonella group and describe the preparation of diagnostic antisera at the vaccine department of the Pasteur Institute, Paris, and the method of studying the antigenic structure of salmonella strains with the aid of these sera. After a preliminary test with four polyvalent anti-sera they use a set of five O-sera and of seven H-sera, which allows them to diagnose the antigens occurring most frequently.

II. The standard rules for the carrying out and reading of the Widal reaction which were adopted by an international conference in London in 1937 are discussed, and the authors' experiences regarding choice and conservation of test-strains, and preparation of suspensions reported. By centrifuging the Widal tubes immediately after having put them up it is possible to avoid the usual delay in reading, and to obtain results within a few minutes. The importance of using

various suspensions of known antigenic composition not only for typhoid, but also for the paratyphoids is stressed. The authors do not support the conference in the one point of incubation at 52°C.

—A. MAYR-HARTING.

KAUFFMANN, F. (1944.) Über Antigenbeziehungen zwischen Coli-, Dysenterie- und Salmonella-Bakterien. [Antigenic relationships between coli-dysentery and salmonella bacteria.]—*Acta path. microbiol. scand.* 21. 72–86. [In German.] 669

The most important coli, dysentery, and salmonella types were submitted to cross agglutination tests against 100 rabbit immune sera in order to determine their O-antigens. Only coliform bacteria with salmonella-antigens were classified as salmonella-coli. Organisms containing salmonella-antigens but determined as coli proper in biochemical tests were not so classified. The great importance of appropriate cultural methods for the differential diagnosis in the coli, dysentery and salmonella groups is again emphasized.—E. KLIENEBERGER-NOBEL.

BARNARD, H. F. (1946.) The effect of temperature on the survival of *Shigella sonnei* and *S. flexneri* in faeces.—*Mon. Bull. Minist. Hlth Emerg. publ. Hlth Lab. Serv.* 5. 261–264.

[Author's summary copied verbatim.] 670

Experiments in which specimens of faeces from acute Sonne and Flexner dysentery cases were stored at different temperatures showed that the organisms could be isolated for a much longer period from samples stored at low temperature.

Sh. sonnei was regularly isolated after 96, 72, 24 and 6 hours from specimens stored at 4°C., 20°C., 30°C. and 37°C. respectively. *Sh. flexneri* was regularly isolated after storage for the same periods at 4°C., 30°C. and 37°C., and after 48 hours at 20°C., cultivation after 3 and 4 days at that temperature not being attempted. These times may not, however, apply to less heavily infected samples.

I. CRAWFORD, A. B. (1947.) Summarization of discussions on vaccination against bovine brucellosis.—*J. Amer. vet. med. Ass.* 110. 99–102. 671

II. HARING, C. M., TRAUM, J., & MADERIOS, W. E. (1947.) Vaccination against brucellosis.—*Ibid.* 103–107. 672

I. An up-to-date survey of our present knowledge in regard to vaccination with Strain 19. This vaccination does not eradicate the disease and has no curative value, but should be used on young stock in infected herds. There is no evidence or proof that infection is set up in herds by the use of this vaccine or that it causes sterility. The persistence of immunity following vaccination

is discussed. Lyophilized vaccine is still in the experimental stage. Vaccination, sanitary procedures, and removal of reactors should be combined in an eradication programme.

II. Strain 19 is a valuable aid in the control of contagious abortion, but the resistance of the host may be overwhelmed by exposure to massive field infection. Vaccination at ages approaching maturity is relatively more efficient than vaccination of young stock. Heifers vaccinated at 7–12 months old have shown a satisfactory recession of post vaccination titres. Revaccination of adults previously vaccinated as heifers seems worthy of further consideration.

—S. J. GILBERT.

THIERY, J. P. (1944.) La brucellose des bovins. Les vaccins vivants employés dans la prémunition de la brucellose bovine sont-ils dangereux ? [The danger of using live vaccines in immunization against bovine brucellosis.]—*Rev. Path. Comp.* 44. 213–215. 673

Experiments on cattle showed that virulent organisms used in vaccination are excreted in the milk but the milk from cattle inoculated with an avirulent strain of *Br. abortus* given in an oily vehicle proved negative on inoculation of g. pigs.

—S. J. GILBERT.

LISBONNE, M., & ROMAN, G. (1944.) Vaccination des bovins contre l'infection brucellique par l'inoculation associée d'un germe avirulent et d'un antigène glucido-lipidique. [The inoculation of an avirulent organism and a glucolipoid antigen in the vaccination of cattle against brucellosis.]—*Rev. Path. Comp.* 44. 210–212. 674

Successful experiments on g. pigs and sheep had previously been described in which vaccination was done by the use of an avirulent strain of *Br. abortus* together with a glucolipoid extract of *Br. melitensis*. From 1941 to 1943 similar vaccinations were performed on 59 heifers; all were in a severely infected herd. Sixty-eight normal parturitions occurred during the period of observation and there was only one abortion.—S. J. GILBERT.

LAMANNA, C., McELROY, O. E., & EKLUND, H. W. (1946.) The purification and crystallization of *Clostridium botulinum* Type A toxin.—*Science* 103. 613–614. 675

The several stages are described for the concentration and purification of *botulinum* toxin by means of acid precipitation, followed by elution with buffer and successive precipitations with ammonium sulphate under carefully controlled conditions, especially as regards the pH values. Crystals are finally obtained which are needle-like in shape and characteristically lie parallel to one another. The crystals which are protein in nature

were shown to be toxin in a high state of purity. Both the crystalline toxin and its amorphous fore-runner when studied by electrophoresis, revealed single components with similar mobilities.—J. K.

EVANS, D. G. (1947.) Anticollagenase in immunity to *Cl. welchii* type A infection.—*Brit. J. exp. Path.* **28**. 24–30. 676

It had previously been shown that of the toxins of *Cl. welchii* type A, α toxin, θ haemolysin and hyaluronidase, the α toxin had by far the greatest pathological significance. With the recognition of a fourth toxin, collagenase, an antigenic enzyme capable, by its action on collagen, of breaking down muscle fibres, further tests were made to determine its significance.

G. pigs were inoculated with washed suspensions of *Cl. welchii* in three ways:—intramuscularly three hours after an injection of CaCl_2 ; intramuscularly with the admixture of adrenalin; and intradermally with the admixture of adrenalin. For g. pigs injected intramuscularly, α antitoxin serum was protective but anticollagenase conferred no protection itself, nor did it enhance the protective power of α antitoxin. Anticollagenase conferred no protection on g. pigs inoculated intramuscularly with the admixture of adrenalin and intradermally whereas α antitoxin was protective. Thus collagenase does not appear to play any substantial part in the genesis of fatal gas gangrene.—R. SCARISBRICK.

MASON, J. H., & WIDDICOMBE, M. (1946.) The titration of the beta fraction of the toxin of *Clostridium Welchii*, Type B, by the flocculation reaction.—*J. S. Afr. vet. med. Ass.* **17**. 145–149. 677

A pepsin-treated antitoxin which flocculated relatively quickly was used, and in addition the tubes were stoppered and gently rocked while immersed in a water bath at 45°C. Fresh toxins (β) flocculated in 25–45 minutes, when their pH was 6–6.5. Toxoids did not flocculate and blending with a known amount of toxin was necessary. In the case of toxins, there was close agreement between the Lf and L+ values. When a group of toxoids was tested by these two methods, their antigenicity relative to each other was shown to be the same by either method, but the endpoints were not identical. The relative antigenicity of the toxoids could be assessed by the flocculation test or by measuring the neutralizing power of the serum of immunized g. pigs, as well as by the orthodox method of challenging the immunized g. pigs with increasing doses of toxin.—J. KEPPIE.

CHAPUIS, J. P., & JÉQUIER-DOGE, E. (1946.) Une infection rare à leptospires (type Canicola). [A rare type of leptospirosis (*L. canicola*).]—*Schweiz. med. Wschr.* **76**. 279–280. 678

A case of human infection with *L. canicola* is described, the diagnosis being based on agglutination tests made on the patient (1 : 3,200) and on his dog (1 : 64,000). The symptoms are described as characteristic, consisting of high fever, marked tendency to collapse, encephalitis, meningitis, intercranial hypertension and paralysis of groups of muscles due to nervous dysfunction.—U. F. R.

GALL, L. S. (1946.) Some studies on the rumen microorganisms of sheep and cattle.—*Thesis, Cornell*. pp. 87. 679

The role of micro-organisms as intestinal flora of cattle and sheep is evaluated, and the current literature reviewed. Samples of rumen material were obtained by means of a stomach tube, or by rumen fistula from recently slaughtered animals. The bacterial flora was determined by direct counts and by cultures. The fistulated animals proved to be the best subjects; samples obtained by stomach tube gave unreliable results. The maintenance of anaerobic conditions was important. Bacteria were present in the rumen of cattle and sheep in numbers of about 100 billion per g. of fresh material. Most of the cultures from the cattle, and many from the sheep were capable of digesting cellulose.—H. L. GILMAN.

TARUSSOF, B. N. (1946.) Detection of bacteriological toxins in fluids. [Correspondence.]—*Nature, Lond.* **157**. 132–133. 680

This is a summary of T.'s work on the volume contraction effects which accompany swelling of living tissues in saline. 1 g. of muscle is placed in a 3 ml. bottle, with a ground-glass stopper through which runs a capillary bore. The apparatus is then filled with physiological saline, and the stopper inserted in the manner of that of a specific gravity bottle.

The contraction in volume is measured in arbitrary units by the movement of the meniscus in the capillary, the temperature being rigidly controlled. A "normal" curve is established by plotting contraction against time. It is found that striking deviations from this curve (decreased contraction) occur when very small amounts (10^{-8} to 10^{-11} mg.) of bacterial toxins such as tetanus, botulinus A and B and diphtheria, are added to the saline, and these effects can be abolished by the addition of the appropriate antiserum.

—J. B. BROOKSBY.

See also absts. 700 (*Bact. coli*); 701 (swine erysipelas); 719 (TB. in dogs and cats); 720 (mastitis, brucellosis and Johne's disease); 731-732 (antibiotics); 733 (pasteurellosis therapy); 735 (brucellosis therapy); 736 (*Staph. aureus* and penicillin); 737, 738 (mastitis therapy); 740-742 (streptomycin and TB.); 744 (*Bact. coli* and calf scours); 745 (blackleg); 762 (staphylococcal enzymes); 768 (organisms in the rumen); 778 (bacteria in milk); 791 (stains); 805 (TB. in Scotland); 806 (TB. in N. Ireland); 807-822 (annual reports); 823 (infectious diseases of animals); 824 (diseases of camels); 827 (a dictionary of fungi).

DISEASES CAUSED BY PROTOZOAN PARASITES

HAWKING, F. (1946.) Growth of protozoa in tissue culture. III. *Trypanosoma cruzi*.—*Trans. R. Soc. trop. Med. Hyg.* 40. 345-349. [For previous parts, see *V. B.* 16. 138, and 17. 361.] 681

The technique by which H. grew *Plasmodium gallinaceum* in cultures of chicken macrophages seemed applicable to other parasites with an intracellular phase in cells which can be cultivated *in vitro*. The cultivation of *Trypanosoma cruzi* by this means is now described. A suspension of trypanosomes from infected mouse blood was added to cultures of rat embryo. The trypanosomes were present in the culture fluid in considerable numbers during the first two days after which they became fewer until they were rare or had completely disappeared by about the 12th day. Later on, small numbers again appeared and remained visible until the end of the culture. After six days stained preparations showed many intracellular parasites ranging from leishmanoid to mature trypanosome forms. The parasite occurred in cardiac muscle fibres, macrophages and probable reticulo-endothelial cells. Cultures were successfully maintained for 59 days. *T. cruzi* has also been grown in cultures from the brain of the chick embryo. The method affords a useful technique for the examination of the intracellular development of *T. cruzi*.—C. HORTON SMITH.

PEÑA-YÁNEZ, A. (1948.) Ueber die Entwicklung der Leishmania donovani im Organismus und ihre Beziehung zu der Temperaturkurve. [The development of *Leishmania donovani* in the body in relation to the temperature curve.]—*Dtsch. Tropenmed. Z.* 47. 193-198. 682

From observations on cases of internal leishmaniasis of adult human beings during the Spanish civil war, it was noted that infections were characterized by irregular attacks of fever which distinguished them from malaria. From this it was suspected that the development of the parasites was not regularly synchronized.

During the stage of the disease when great fluctuations in temperature were occurring the parasites were found in large numbers, extracellularly in spleen and bone marrow smears, whilst when the temperature showed little fluctuation the majority of the parasites were intracellular in mononuclear cells, and many of them showed evidence of degeneration. The extra-cellular parasites are described as belonging to four types:—long forms with the nucleus at one end, with no visible kinetoplast; broader forms with the nucleus lying peripherally, or central, with a punctiform kinetoplast; oval, sometimes ring forms, with a characteristic rod-

shaped kinetoplast; larger forms showing evidence of division, with the nucleus and kinetoplast at one end. This variation in form coinciding with the febrile attacks is explained as indicating a cycle of development in the vertebrate host with 24 hours for its completion. The cycle results in the formation of the first type of parasite described. Growth in size is accompanied by the development of a blepharoplast, appearing first as a thickening of the nuclear membrane. The nucleus and blepharoplast separate developing a rod-shaped structure, the nucleus and blepharoplast then migrate to one pole, where they again become associated; longitudinal division follows this association.—U. F. RICHARDSON.

FARR, M. M., & WEHR, E. E. (1947.) Development stages in the life cycle of *Eimeria tenella* affected by sulfamethazine treatment.—*Proc. helminth. Soc., Wash.* 14. 12-20. 683

This study of the effect of sulphamethazine on the various stages of the life history of *Eimeria tenella* shows that the drug was not active against the sporozoites and that their intracellular development continued normally; it was to some extent active against the first generation schizonts; that it destroyed the second generation schizonts and their merozoites and affected the young gametocytes. The stage most susceptible to the drug was therefore the second generation schizont. (This observation supports the findings of British workers.)—C. HORTON SMITH.

STEWART, J. S. (1947.) Host-parasite specificity in coccidia: infection of the chicken with the turkey coccidium, *Eimeria meleagridis*.—*Parasitology.* 38. 157-159. 684

A full knowledge of the host-specificity of parasites is next in importance to their control by chemotherapeutical means and disinfection. On the whole, the host-specificity of coccidia is rigid. S., observing all the necessary precautions, succeeded in infecting chickens with the turkey coccidium, *Eimeria meleagridis*, and confirmed the identity of the species by feeding the resulting oocysts to young turkeys. *E. acervoulina* oocysts from chickens failed to infect young turkeys. It was observed that variations in size occurred in the oocysts of *E. meleagridis* recovered from chickens. S. attributes these variations to the fact that the coccidia developed in an abnormal host. [It is to be hoped that S. will carry this investigation further and demonstrate the intracellular stages of the life-history in the chickens.]—C. H. S.

ANON. (1947.) Notes on animal diseases. II. East coast fever and related diseases.—*E. Afr. agric. j.* 12. 167-170. [For part I, see *V. B.* 17. 313.] 685

ANON. (1947.) Notes on animal diseases.

III. Piroplasmosis and anaplasmosis of animals other than cattle, and trypanosomiasis of domesticated animals.—*Ibid.* 220-224. 686

II. A general account is given of theilerial affections as they occur in Kenya. East coast fever is said to be a disease of cattle only, all attempts to infect other domestic animals and game having failed. As regards immunity, it is said that the majority of recovered adult animals develop a durable immunity, but that in calves probably a considerable percentage are liable to a second infection. In clean areas it is said the outbreaks may assume a mild form, animals being sick for a few days only.

Under tick-destruction, the importance of hand-dressing the ears and tail is emphasized, one part 7% nicotine extract in eight parts crude oil being recommended. In discussing related organisms *Theileria mutans* is said also to occur, almost all cattle becoming infected early in life, and thereafter harbouring the organism. The presence of Koch's bodies in gland or spleen smears from *Theileria mutans* cases is said to be rare. [This is questionable.]

III. A general account is given of equine piroplasmosis (*Babesia caballi* and *B. equi*), piroplasmosis of pigs (*B. trautmanni*) and piroplasmosis of dogs (*B. canis*). The pathogenicity of *B. trautmanni* is said to be low. Small piroplasms are said occasionally to occur in sheep, but they do not appear to be of much importance, and no indication is given of the species involved. Phenamidine is mentioned in the treatment of canine infections, but not in other animals.

The notes on trypanosomiasis deal with transmission by tsetse flies, although it is admitted that other biting flies may be responsible for transmission, *Trypanosoma evansi* being said to be transmitted by tabanids, and possibly ticks (*Ornithodoros* spp.).

Tryp. congolense is described as the principal species involved in trypanosomiasis of cattle, *Tryp. vivax* causing a similar but milder disease. Pure natural infections with *Tryp. brucei* and *Tryp. evansi* are rare in cattle.

In horses *Tryp. evansi* and *Tryp. brucei* are the more pathogenic species, *Tryp. congolense* causing milder symptoms, and less fatal infection. The smaller ruminants are said to be relatively resistant to trypanosomes though *Tryp. congolense*, *Tryp. brucei* and *Tryp. vivax* have been recorded in them.

See also absts. 807-822 (annual reports).

Surra is described in camels, and dogs may be infected with *Tryp. evansi*, *Tryp. brucei* and *Tryp. congolense*. As regards immunity it is stated that "when natural recovery from an attack of trypanosomiasis does occur, premunity similar to that following redwater and anaplasmosis infection, but more unstable, frequently develops".

Under treatment of trypanosomiasis, naganol (antrypol) is mentioned for *Tryp. evansi* and *Tryp. brucei*, tartar emetic, antimosan and stibophen for *Tryp. vivax*, and phenanthridinium 897, and 1553, for *Tryp. congolense*, the dose of these last compounds being given as 1 ml. of a 1% solution per 100 lb. live weight, given intramuscularly or intravenously.—U. F. RICHARDSON.

BRION, A. (1943.) Une nouvelle maladie du cheval, l'anaplasmose et son parasite causal, *Anaplasma equi* n. sp. [A new equine disease: anaplasmosis and its causal parasite *Anaplasma equi*.]—C. R. Acad. Sci., Paris. 217. 709-710. 687

A disease of horses characterized by febrile attacks lasting 3-7 days, recurring at intervals of 1-4 weeks, has been recorded since 1941, from the Haute-Savoie district of France, being prevalent from June to December. The onset of an attack is sudden, accompanied by symptoms of extreme prostration, weakness of the hind limbs, fever, and subicteric mucous membranes. The urine contains bilirubin, but no haemoglobin or bile salts. Treatment with sulphonamides, acriflavine, neo-arsphenamine, antrypol, "trypoxyl" or acetarsol was neither curative nor effective in preventing subsequent attacks.

During the febrile attacks anaplasma bodies occurred in the r.b.c. being 0.5-0.7 μ in diameter when single, and 0.3-0.5 μ in diameter when occurring as pairs. No piroplasms were detected, nor were nucleated red cells, poikilocytosis or polychromatophilia present.

The inoculation of washed r.b.c. from an affected animal into a healthy horse resulted in an attack of the disease 24 days later, with the appearance of anaplasma bodies, typical symptoms followed by death in four days.

It is concluded that the disease is an anaplasmosis, resembling the disease in cattle in the length of the incubation period, and in its seasonal occurrence. The mortality was difficult to determine, as affected horses are usually sold for slaughter. The name *Anaplasma equi* is proposed for the causative organism.—U. F. RICHARDSON.

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

GUDME, N. (1940.) Mund- og Klovesygge hos et Fol? [A suspected case of foot and mouth

disease in a foal.]—Maanedsskr. Dyrlaeg. 52. 294, 688

A three-day-old foal showed vesicular lesions of the buccal mucous membrane and coronary bands of all four feet which resembled F. & M. disease lesions. The foal and its dam were housed in a cattle shed. None of the cattle on the farm showed any symptoms of F. & M. disease. The foal died seven days later, before death its hooves had separated from the sensitive tissues and fallen off.

Seven days after the death of the foal F. & M. disease occurred in the cows on the farm and this was the first outbreak in the district. No transmission experiments were possible with material from the foal.

G. raises the question of the susceptibility of horses to foot and mouth disease.—M. C.

ZEISSIG, A., & KORN, R. F. (1946.) **Experiences in the control of rabies in New York State.**—*Proc. 50th ann. Meet. U.S. Live Stk sanit. Ass.*, 1946. pp. 17–36. 689

The incidence of rabies in New York State since 1932 is tabulated showing an increase from 49 cases in 1932 to 1,174 in 1946. A feature of the table is the large proportion of cases which have occurred in foxes and in cattle since 1943, cases in cattle in 1946 exceeded those in dogs. The methods of control which are being developed are reviewed.

The recommended procedure is based on the value of mass vaccination of dogs as a valuable adjunct to dog control, the application of control measures over areas not smaller than a county, early institution of control measures when a county is threatened with infection, the appointment of a well qualified person to supervise control measures, the appointment of county rabies advisory committees and an educational programme. In the approach to the dog-owner emphasis should be placed on the benefits which the owner and his dog will derive rather than on the legal necessity of complying with regulations.—M. C.

VERGE, J. (1946.) *Les Vampires dans la transmission de la Rage à l'homme et aux animaux. [Bats and the transmission of rabies to man and to animals.]—Rev. Path. Comp.* 46. 475–479. 690

A general account is given of the bat-borne rabies of Trinidad, in which ruminants, particularly cattle, were the principal victims, only two dogs being involved. All the recorded cases were of the paralytic type. Attention is drawn to a similar type of rabies occurring in South America, and in general to the possibility that the true nature of a disease may be overlooked if it varies epidemiologically from the classical type.

—U. F. RICHARDSON.

PERŠIĆ, V., & JAKŠIĆ, B. Z. (1944.) *Proizvodnja*

seruma protiv svinjske kuge s osobitim obzirom na bolje izkorišćivanje virus svinja i mogućnost praktične upotrebe seruma svinja simultano ciepljenih protiv kuge. [Preparation of swine fever antiserum, with special reference to economies in the virus used for hyperimmunization and to the use of serum from simultaneously immunized pigs.]—*Vet. Arhiv.* 14. 265–286. [Abst. from German summary.] 691

By the use of citrated blood instead of defibrinated blood an economy of 20% was made in the amount of blood used for hyperimmunization of virus producers.

By making a suspension of ground lymph nodes, liver, spleen and kidneys, there was considerable economy in virus production.

Details are given of tests carried out on pigs with these products.

A concentrated pseudoglobulin fraction of immune serum was prepared, but found to be uneconomical.—K. J. SINCLAIR.

MARŽAN, B. (1945.) *Patološko-histološka slika središnjeg živčanog sustava kod zarazne uzetosti svinja (meningoencephalomyelitis non purulenta enzootica suum).* [The pathological histology of the central nervous system in porcine encephalomyelitis.]—*Vet. Arhiv.* 15. 25–40. [Abst from German summary.] 692

The pathological histology of the central nervous system in porcine encephalomyelitis is described. Twenty-nine spontaneously infected and 117 artificially infected pigs were examined and compared with three cases of swine fever. Typical lesions were observed in 21 of the spontaneously infected pigs but not in the remaining eight. Of the 117 artificially infected pigs there were typical lesions in 71, but there were no lesions in 25. Twenty-one died as a result of secondary infection, in nine death being due to paratyphoid infection and in 12 to suppurative inflammation of the brain and spinal cord.

In the case of the spontaneously, as well as of the artificially infected animals which showed typical symptoms, there were lesions in the central nervous system which could clearly be differentiated from lesions produced by other diseases of the brain and spinal cord. In the cases examined, there was, in addition to a perivascular lymphocytic infiltration, a degeneration of the ganglion cells in the ventral horns, particularly in the posterior part of the cord.

In some of the artificially infected pigs which acquired secondary infection there were suppurative lesions in the brain and spinal cord. The histological appearance of the central nervous system in the three cases of swine fever and the nine cases of paratyphoid infection resembled those of cases of porcine encephalomyelitis, with

the exception that the lesions were evenly distributed throughout the white and grey matter.

Porcine encephalomyelitis can be accurately diagnosed histologically and differentiated from other diseases of the central nervous system of swine.—E. V. L.

GORET, P., & MÉRY, F. (1947.) A propos de quatre enzooties atypiques de maladie de Carré. [Four atypical enzootic outbreaks of canine distemper.]—*Bull. Acad. vét. Fr.* 20. 176-181. 693

Four separate outbreaks of disease have been observed during the past ten years, characterized by very sudden onset, very marked muscular wasting, dysentery and ulceration of the mouth. On P.M. examination lesions were confined to the liver and kidneys.

These outbreaks occurred in isolated collections of dogs where chances of introduction of infection were remote. Two of the outbreaks were in sledge dogs in Greenland, one in a kennel of greyhounds in a rural area in France, and one in a kennel of pointers.

In two of these outbreaks ferrets were inoculated with either brain or spleen emulsion and in both instances the ferrets died. It is stated that cross immunity experiments indicated that the ferrets were infected with distemper virus. In the other two outbreaks no transmission experiments were made. Bacteriological examinations were negative.

The authors considered that all four outbreaks were caused by atypical distemper virus and speculate as to the possible sources from which infection might have been introduced. They reject the hypothesis that a virus carrier may have been concerned and suggest the possibility that some small wild carnivore such as the weasel may have been the source. [There is no mention of any examination having been made for *Leptospira*.]

In the discussion Verge suggested the possibility that *Leptospira canicola* was the cause.

—M. C.

ROGERS, W. N. (1937.) Sulla possibilità di rapporti fra encefalite spontanea del gatto ed encefalite umana (ricerche cliniche ed anatomopatologiche). [On the possibility of a relationship between the spontaneous encephalitis of the cat and human encephalitis.]—*Sperimentale*. 91. 3-34. [English, French and German Summaries.] 694

After a brief review of some of the literature dealing with non-purulent encephalitis in animals especially in cats, R. describes a human case resembling encephalitis lethargica. In the house in which the human case occurred a cat had shown symptoms of encephalitis. The histo-pathology

of the lesions found in the brain of the cat are described in detail and illustrated. Transmission experiments were made using a filtrate of an emulsion of the brain from the sick cat. Three cats were inoculated intracerebrally. Lesions resembling those in the sick cat were found in two of the three inoculated cats.

R. concludes that the disease in the sick cat was caused by a virus and suggests the possibility that the human case had been infected from the cat.—M. C.

ROGERS, W. N. (1947.) The domestic cat and neurotropic viruses. [Correspondence.]—*Lancet*. 252. 764-765. 695

R. refers to the possible importance of cats as a source of infection in certain virus diseases of man. An investigation made at Florence into a case of encephalitis in a woman is quoted where infection had possibly been from a cat which had nervous symptoms and in which histological examination of the brain revealed infiltration of the leptomeninges and choroid plexuses and other lesions. Definite lesions were also found in two out of three other cats which were inoculated intracerebrally with a filtrate of the brain of the sick cat. The need for further investigations into the virus diseases of cats is pointed out.—M. C.

HANSON, R. P., WINSLOW, N. S., & BRANDLY, C. A. (1947.) Influence of the route of inoculation of Newcastle disease virus on selective infection of the embryonating egg.—*Amer. J. vet. Res.* 8. 416-420. 696

The haemagglutinative activity of the extra embryonic membranes and fluids of fowl embryos following inoculation by four routes was studied. Fluids from eggs inoculated by the intravenous and allantoic cavity routes gave titres satisfactory for routine haemagglutination work. Those from yolk sac and chorio-allantoic membrane inoculated eggs were too low for diagnostic work.

Haemagglutinins developed most rapidly in eggs inoculated by the intravenous route. Death of embryos occurred somewhat earlier following intravenous and yolk sac inoculation than after allantoic cavity or chorio-allantoic inoculation.

Titration of virus for embryo infectivity was much more sensitive than titration by the haemagglutination method. Virus suspensions having an embryo L.D.₅₀ of 10^{-5} or less failed to produce haemagglutination. Suspensions having an embryo L.D.₅₀ of 10^{-6} had haemagglutination titres varying from undiluted to 1:160. With an embryo L.D.₅₀ of 10^{-8} the agglutination titre ranged from 1:160 to 1:1,280.

A haemagglutinin for fowl erythrocytes was demonstrated in both normal and infected yolk sac membranes. Normal chicken serum inhibited

agglutination caused by this agglutinin.—F. D. A.

CUNNINGHAM, C. H., & STUART, H. O. (1947.) **Cultivation of the virus of infectious bronchitis of chickens in embryonated chicken eggs.**—*Amer. J. vet. Res.* 8. 209–212. 697

Some miscellaneous observations were made on the effect of freezing and thawing and the titration of infectious bronchitis virus in chick embryos.

The supernatant fluid of embryonic fluids frozen at -25 and -70°C . had higher virus activity than samples frozen at -10°C . The virus yield following inoculation with 0.05 ml. of undiluted embryonic fluid was somewhat greater than that following inoculation with 0.2 ml.—F. D. ASPLIN.

FRANCIS, T., JR. (1947.) **Dissociation of hemagglutinating and antibody-measuring capacities of influenza virus.**—*J. exp. Med.* 85. 1–7. 698

Some strains of Type B influenza virus heated to 56°C . for 30 minutes showed no significant change in haemagglutination titres, but when heated preparations were tested as antigen in serum-antibody titrations they were found to have lost much of their capacity to agglutinate r.b.c. With heated antigen there was a sharp rise in the inhibition effect of normal serum. The haemagglutinating activity of all Type A strains tested and some Type B strains was destroyed by heat at 56°C . for 30 minutes.

See also absts. 659 (fowl paralysis); 706–708 (avian leucosis); 743 (influenza virus and streptomycin); 783 (cultivation of viruses); 807–822 (annual reports); 823 infectious diseases of animals); 824 (diseases of camels).

IMMUNITY

BAYLOR, M. B., & CLARK, G. I. (1947.) **Electron microscope studies of the "interference phenomenon" between bacterial viruses of the *Escherichia coli* group.**—*J. Bact.* 53. 49–55. 700

Using a strain of *Bact. coli* and two strains of bacteriophage T_1 and T_2 of which T_2 was known to suppress the development of T_1 the mechanism of the interference phenomenon was observed by means of the electron microscope. Details of the technique are given and the results are illustrated by numerous plates. It was possible to differentiate T_1 from T_2 by their morphology as revealed by the electron microscope.

When a mixture of the two bacteriophages was added to *Bact. coli* organisms it was shown that both were adsorbed on the same bacterial cells but that only one bacteriophage appeared in large quantities in the cell debris following lysis.

These experiments are considered to afford visual confirmation of the interference phenomenon as demonstrated by Delbrück and Luria [see *V. B.* 14. 122].—M. C.

DE MOULIN, F. (1946.) Over den aard der

The results suggested that influenza Type B virus contains a complete antigen comprising a heat stable component which agglutinates erythrocytes and reacts primarily with specific antibody and also a factor in normal serum which ordinarily tends to inhibit haemagglutination.—F. D. A.

HUEBNER, R. J., STAMPS, P., & ARMSTRONG, C. (1947.) **Rickettsialpox—a newly recognized rickettsial disease. I. Isolation of the etiological agent.**—*Publ. Hlth Rep., Wash.* 61. 1605–1614. [Authors' summary copied verbatim.] 699

An organism having the morphologic and cultural characteristics of a rickettsia has been isolated from a patient during the course of an unusual outbreak of disease occurring in New York. This organism produces illness in mice and guinea pigs and grows well in the yolk sacs of fertile eggs.

Ether-extracted yolk-sac antigens have been prepared which fix complement with convalescent serums drawn from typical cases. This reaction is apparently specific insofar as it has been tested, except for cross reactions with Rocky Mountain spotted fever.

The behavior of the M.K. organism in fertile eggs, mice, and guinea pigs has been described. Certain similarities to *R. conori* have been pointed out, but further work will be necessary before any conclusion as to further similarities is possible.

immunitet bij vlekziekte. [The nature of immunity to swine erysipelas.]—*Tijdschr. Diergeneesk.* 71. 792–804. [Abst. from English summary.] 701

Blood tests on horses during immunization yielded no evidence of the existence of toxins. Reactions in horses after injection of large quantities of broth culture are due to anaphylaxis rather than to the action of a toxin. The serum of actively immunized horses contains opsonins; leucocytes from a highly-immune horse appeared to contain a substance destructive to the organisms in an agar culture, and also possessed opsonic activity.

On vaccination, the swine have to provide the necessary complement for bactericidal activation of the serum, to prevent multiplication of the vaccine bacteria injected; the production of complement has been shown to be affected by liver disorders and anomalies in the osseous system and kidneys.—E. V. L.

MOLE, R. H. (1947.) **Multiple-pressure vaccination.**—*Lancet.* 252. 597. 702

A comparison was made of the scratch

method and the multiple pressure method of inoculation of human patients with vaccine

lymph; the latter method gave slightly fewer failures as compared with the former.—W. M. H.

See also absts. 636 (staphylococcal diseases); 644 (tuberculosis); 653 (swine erysipelas); 661 (colon group antigens); 665 (saccharolipoid antigens); 671-673 (brucellosis); 676 (*Cl. welchii*); 691 (swine fever); 698 (influenza); 710 (nutrition and immunity); 745 (blackleg); 770 (anaphylaxis and sex hormones); 774 (testosterone and immunity); 776 (allergy and wound healing); 784, 785 (media).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

PFADT, R. E. (1947.) Effects of temperature and humidity on larval and pupal stages of the common cattle grub.—*J. econ. Ent.* 40. 293-300. 703

The major pests of cattle in Wyoming are the common cattle grub, *Hypoderma lineatum*, and the heel fly, *Hypoderma bovis*. For control of cattle grub one to three treatments with rotenone spray or dust are given.

Larvae for experimental purposes were collected daily when they fell to the bottom of

cotton duck coats placed round the infested cattle. The majority of larvae survived a temperature of -15°C ., and, since ground temperatures at Laramie do not fall below -13°C . after February 1st, it is concluded that treatments must be given from February 1st onwards. It should be noted, however, that if the larvae are wetted by rain or melted snow before freezing occurs they can be killed at temperatures not much below 0°C .—BERYL A. THURSTON.

See also absts. 722 (tick paralysis); 748 (D.D.T.); 807-822 (annual reports).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

SÖDERHJELM, L. (1946.) Echinococcus hydatidosus hos ren (Rangifer tarandus). [*Echinococcus in reindeer.*]—*Skand. VetTidskr.* 36. 378-381. [Abst. from English summary.] 704

Hydatid cysts occur in human beings in northern Scandinavia, chiefly in the reindeer trading districts, and are frequently found in reindeer in Norway, Sweden, the U.S.S.R., and Alaska. In certain herds about 10% of the animals are affected; in Norway and Sweden the infection is usually localized in the lungs.—E. V. L.

BERGSMA, C. (1947.) Een geval van taenia echinococcus bij een hond en de daarmee in verband staande toekomstige bestrijdingsmogelijkheden van de echinococcusziekte bij mensch en dier. [*Taenia echinococcus in a dog and the intestine in relation to the possibilities of control of echinococcus in man and animals.*]

—*Tijdschr. Diergeneesk.* 72. 178-181. 705

Infection of pig livers with echinococcus cysts was noticed in 1946. The lesions are described in detail. It was found that the owner of the pigs also possessed a dog. Examination of the dog's faeces showed eggs of *Taenia* spp. but no eggs of echinococcus. On P.M. examination of the dog a heavy duodenal infection with *T. echinococcus* was found. The dog was suspected of having access to knacker yard offal.

To prevent the spread of infection universal meat inspection and confiscation of affected organs are recommended. This should be coupled with the tracing of affected dogs and enforcing compulsory slaughter.

The number of affected animals increased during the war due to illicit slaughter of food animals.—A. G. WARREN.

See also absts. 786 (microfilariae in blood); 807-822 (annual reports).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

MAGNUSSON, H. (1946.) Om en ovanlig skelettsjukdom hörande till hönsleukoskomplexet. [*An uncommon skeletal disease belonging to the avian leucosis complex.*]—*Skand. VetTidskr.* 36. 70-85. [Abst. from English summary.] 706

Two cases of skeletal changes classed as osteopetrosis gallinarum have been observed in Sweden; recent pathological experience in man and animals seems to indicate they are part of the avian leucosis complex. Apart from metabolism disorders, more than 50% of fowl losses are due

to the leucosis complex in the forms of neural lymphomatosis or fowl paralysis and ocular lymphomatosis.—E. V. L.

HUTT, F. B., & COLE, R. K. (1947.) Genetic control of lymphomatosis in the fowl.—*Science.* 106. 379-384. 707

Beginning with an unselected population hatched in 1935, an experiment has been carried out to determine the feasibility of breeding strains of fowls resistant to lymphomatosis. The procedure followed for 12 years has been (a) to have

all chicks pedigreed, (b) to ensure natural exposure to lymphomatosis, (c) to maintain a uniform environment for all birds at all ages, (d) to select for breeding sires and dams whose production of resistant families has been proved.

From all generations after the fourth from 2,100 to 2,600 females have been started, at six weeks of age, in tests of their viability and have been maintained under test for 500 days. Two resistant lines, C and K and one susceptible line have been maintained. In the unselected population in 1935, 14.6% died of neoplasms, deaths from neoplasms in the two resistant lines in 1944 and 1945 were only 5-8% whilst deaths from neoplasms in the susceptible line had increased to 34.9%. From all causes the mortality in the unselected foundation stock was 66.8%, it was reduced to 22.4% in the C resistant line and 19.9% in the K resistant line, but remained high, at 53.0% in the susceptible line, of the 1945 population. Adult body weight, egg size and egg production were significantly increased in the two resistant lines.

It is suggested that resistant strains might be developed at experiment stations and that stock cockerels of these strains could be sent out to flocks which supply hatcheries.—F. D. ASPLIN.

SZYFRES, B., & TRENCHI, H. (1946.) Linfocitoma de las aves (Linfomatosis Visceral). [*Avian lymphocytoma (visceral lymphomatosis).*]—*Bol. mens. Direcc. Ganad., Montevideo.* 29. 531-545. 708

An annual loss of 30 birds from lymphomatosis occurred in a flock. Lesions were most common in the liver, which was sometimes six times its normal size, the spleen, kidneys and gizzard, but in some cases the ovaries or testicles were affected, and in one case the skin of the

pectoral and cloacal regions and in another the bones. The trabeculae and capsules of the organs only were affected, the parenchyma cells being displaced or occasionally obliterated. The lesions were composed of immature lymphocytes undergoing uncontrolled multiplication. There was no evidence of metastasis and the lesions seemed all to have appeared simultaneously.

The authors consider that this disease is a form of avian leucosis, and recommend the utmost care in the purchase of eggs or birds for rearing, together with strict sanitation. There are hopes that resistant strains may be soon established.

—R. MACGREGOR.

ELTORM, H. (1946.) *Experimental studies on the susceptibility of certain mouse tumours to lowered temperature in vivo. Compared with the susceptibility of normal mouse tissue.* pp. 149. Numerous figs. & refs. Copenhagen: Einar Munksgaard. [Danish summary pp. 112-118.] 709

This monograph is divided into two main parts corresponding to the two experimental methods of approach.

In the first section the author deals with hibernation experiments in which the whole mouse was subjected to low temperatures. The second section deals with work done on exposure to cold of localized parts of the body.

The general conclusion from all the experiments is that cancer cells are more susceptible to lowered temperature than are healthy cells. The individual experiments are difficult to interpret and assess, due to the heavy mortality (up to 70% of the mice in some experiments) and to the inadequate number of controls.

The book is well supplied with references, there is a useful summary and the layout is good.

—A. R. JENNINGS.

See also absts. 749 (colchicine therapy); 804 (cancer research).

NUTRITIONAL AND METABOLIC DISORDERS

GUGGENHEIM, K., & BUECHLER, E. (1946.) *Nutrition and resistance to infection. Bactericidal properties and phagocytic activity of peritoneal fluid of rats in various states of nutritional deficiency.*—*J. Immunol.* 54. 349-356. 710

The effect of various forms of nutritional deficiency on the bactericidal and phagocytic properties of the peritoneal fluid of the rat has been studied following an injection of *Salmonella typhi-murium* into the experimental animals.

A deficiency of vitamin B₁, riboflavin, vitamin A, protein or calorie intake resulted in a diminished resistance to the experimental infection. This was due to decreased bactericidal

power resulting from impairment of the humoral antibody response. An increased phagocytic activity was observed in the deficient animals. The decreased bactericidal power was counteracted by an increased phagocytic activity.—E. K.

FIARDEIRO, J. (1944.) O estado sanitário dos gados, na tecnologia dos produtos animais. [*State of health of livestock, in relation to animal products.*]—*Rev. Med. vet., Lisboa.* 39. 406-411. 711

Animal products and their uses, both as food and in industry are listed. Some of the diseases of animals causing economic loss, and danger to health in man are briefly dealt with. The article concludes by stressing the importance of an

efficient Animal Health Service.—I. W. JENNINGS.

GÖRZE. (1940.) Mangelkrankheiten der Rinder. [Deficiency disease in cattle.].—*Dtsch. tierärztl. Wschr.* 48. 267–268. 712

In cases of general inanition, the carbohydrate, fat, protein, mineral and vitamin content of the diet should be examined. Rachitic conditions seldom give rise to bone deformities in the bovine animal, weakness and liability to infection in calves may be the result of such conditions. Good hay or green food should be included in the pre-natal diet of the mother, calcium preparations may be given before or after birth or even injections of vitamin D or A can be given to the mother. Osteomalacia, recognized by general stiffness of the joints and pain in movement, should be treated in a similar way. For tetany, as well as calcium therapy, a sufficiency of magnesium must be assured, and of vitamin D in stall fed animals. Milk fever is also benefited by calcium-magnesium injections and vitamin D is also helpful for stall fed animals.—R. MARSHALL.

HESTON, W. E., LARSEN, C. D., & DERINGER, M. D. (1945.) Variations in occurrence of pathologic calcification, nephritis, and amyloidosis in mice fed control and modified diets. —*J. nat. Cancer Inst.* 6. 41–47. [Authors' summary copied *verbatim*.] 713

Extensive pathologic calcification was observed in strain A mice 14 and 17 months of age that had been fed a low cystine-low protein diet. The highest degree of calcification occurred in the lungs of certain animals, but it was also observed in the aorta and arteries of the other organs sectioned, including the heart, kidneys and gonads. With the exception of the testes, the lesion was infrequent and irregular in the organs of strain A mice of the same age, fed the high cystine-low protein diet *ad libitum*, high-cystine-low protein diet restricted, and Purina dog chow. In the arteries of the testes it occurred in males fed all these diets but was more frequent in those fed the high-cystine diets than in those fed dog chow.

The deficient diets exerted an inhibitory effect on the development of the type of nephritis that commonly occurs in strain A mice. Practically all the mice fed Purina dog chow had nephritis, but the incidence was less in those fed the high cystine-low protein diet *ad libitum*, still less in those fed the high cystine-low protein diet restricted, and least in the animals fed the low cystine-low protein diet. Throughout the various groups there was a correlation between the appearance of nephritis and of amyloidosis.

ALLCROFT, R. (1946.) Hypocupraemia in cattle. [Correspondence.].—*Nature, Lond.* 158. 796. 714

On examination of the blood of cattle with chronic scouring, in a small herd in Cheshire, the only abnormality observed was a low copper value (0.01–0.03 mg. per 100 ml.). Haemoglobin values were normal. The fields grazed by the animals resembled peat bog and because of this and the chronic scouring the disease was thought to be similar to the "peat scours" of New Zealand. Normal copper content of more than 10 ppm. was found, however, from pasture analysis. The disorder thus differs in two respects from "peat scours" and from the disorder previously reported as suspected copper deficiency in Aberdeenshire, both of which were associated with low copper values of the pastures and low haemoglobin values in the affected animals. The blood picture resembles that of ewes in the "swayback" areas of Derbyshire namely also low blood copper values associated with normal pasture values.

Blood samples having a low copper content have also been received from cattle in the Fens having stunted growth, rough coats, depressed appetites and diarrhoea only in the later stages of the disease. These seem to be the first records of bovine hypocupraemia in Britain and in both cases pasture contents of copper were normal.

—ALAN A. WILSON.

NORDFELDT, S. (1945.) Avitaminosis A in breeding sows.—*Lantbr.-högskol. Ann. Uppsala.* 12. 204–221. [In English.] 715

Eight sows were divided into two groups of four and fed skim milk, ground oats and a mineral supplement. One group was given in addition 50 g. of alfalfa meal per head per day. This diet was started 2½–3 months before breeding. In both groups the gestation period was normal. There was no significant difference in the size and weight of the litters in the two groups. Farrowing proceeded normally in the carotene fed group but in the other it was prolonged and in one case extended over two days.

The young pigs from the carotene deficient sows were weak, growth was slow and lameness and paraplegia were evident. Of 48 pigs born in this group 28 had died by the end of three weeks. After the same interval in the carotene fed group there were 38 alive out of 46 farrowed. In the carotene deficient group the piglets had an average skin temperature 2°C. higher than in the control group and there was a poor growth of hair. It is suggested that the early deaths may have been due to faulty heat regulation. Vitamin A assays in the liver from this group gave less than one International Unit of vitamin A per g. of liver at 19 days of age.

The formation of haematomata under the skin in the sows in the vitamin A deficient group was also noted.

Five weeks after farrowing the sows and piglets surviving in the vitamin A deficient group were given cod liver oil and alfalfa meal. The lameness disappeared and the growth rate became normal. The four sows were served again. Litters were normal and growth satisfactory but farrowing was prolonged and haematomata formation was seen during this second lactation period.

N. concludes that 34 μ g. of β -carotene per kg. body weight is sufficient for the maintenance of good health in the sows and normal development and growth in the piglets.—D. LUKE.

THORELL, B., & WILTON, A. (1946.) **The nucleotide metabolism of the dentine cells under normal conditions and in avitaminosis C.**—*Acta path. microbiol. scand.* 22. 593–602. [In English.] 716

The nucleotide metabolism of the dentine cells was studied to ascertain whether the immature cells at the apex had a cytochemical organization similar to that found in cells undergoing intense division with consequent formation of cytoplasmic protein, also whether the changes induced in mature dentine cells by lack of vitamin C signified a return to an earlier developmental stage, corresponding to that of the growing cells situated apically.

Normal growing cells of the root had a similar distribution and concentration of polynucleotides as has been observed in protein-producing cells of the embryo, indicating an intense production of cytoplasmic protein. The concentration of polynucleotides decreased in mature dentine cells. The scorbutic changes in the dentine tissue of the g. pig were characterized by a change of the mature dentine cells into "scorbutic" cells containing high amounts of ribose-polynucleotides in the cytoplasm similar to that found in growing root cells. The immature root cells were not significantly affected even in the most severe cases of scurvy.

The authors conclude that a deficiency of vitamin C causes a reversion of the differentiated

dentine-forming cells into a functional stage similar to that found in immature cells in the apical zone of growth.—E. KODICEK.

KLARENBECK, A. (1947.) **Acute digestiestoornissen en pylorospasmus bij het konijn in de bezettingsjaren. [Acute digestive disturbances and pyloric spasms.]—*Tijdschr. Diergeneesk.* 72. 1–10. [English summary.] 717**

K. describes a condition occurring in rabbits up to the half-grown stage, accompanied by anorexia and tympanites, with death in 1–3 days. Spasm of the pylorus was visible in the X-ray photograph and K. speculates that there was also spasm in some part of the intestine. The lesions found P.M. indicated catarrhal enteritis. The condition was considered to be caused by unsuitable food consisting mainly of potatoes.

All attempts at treatment were unsuccessful.

V. D. BERG, W. (1946.) **Iets over "Een vorm van tetanie" bij kalveren (lal, blèr, brul). [A form of tetany in calves in Holland.]—*Tijdschr. Diergeneesk.* 71. 832–841. [Abst. from English summary.] 718**

Among the diseases of calves grouped together under the heading of tetany, the chief symptoms of which are crying out and convulsions followed quickly by death in most cases, there occurs a more closely-defined form, known in Holland as *spierlal*. In this form the symptoms are the same, but with a characteristic microscopic appearance of the muscles. A clinical study was made of a limited number of cases of this sporadic disease, about which very little is known as yet and very little is to be found in literature on the subject. In addition to the symptoms already mentioned there were two others, a disturbance of the cerebro-spinal axis and onset of blindness a considerable time before the convulsions. Vitamin A deficiency can most probably be ruled out. It was thought that the ration given was deficient in one of the milk fat components and that the condition was not related to the protein in the diet.

—F. E. W.

See also absts. 807–822 (annual reports); 825 (trace elements in plants and animals).

DISEASES, GENERAL

VERGE. (1944.) **Les animaux victimes des infections humaines. [Diseases of man transmissible to animals.]—*Rev. Path. Comp.* 44. 65–67. 719**

The incidence of TB. human type infection in dogs is 65.7% and bovine 34.3% and is commonest near coffee stalls, wine shops and restaurants and other places where the pavements are soiled with human sputum. In cats, however,

the incidence of human TB. infection is only 4.6%.—R. MACGREGOR.

EDWARDS, S. J. (1947.) **Some diseases of dairy cattle. [Mastitis, Brucellosis and Johne's Disease.]—*Vet. Rec.* 59. 211–213. 720**

MASTITIS. About 80% of all clinical cases of bovine mastitis are caused by *Str. agalactiae*. Control should mainly be directed towards

rigorous dairy hygiene at the time of milking; details of a system for the purpose are given. A war-time lapse has occurred in dairy hygiene and also a lack of suitable centres for routine diagnosis. For treatment, injection into the udder of sulph-anilamide in an oil-water-base, tyrothricin in water and penicillin have all given encouraging results. The early work on penicillin was severely handicapped by the very small amounts available. Extensive work with penicillin is in progress.

Hand stripping should be avoided. The milking machine is best applied within ten minutes of a primary stimulation such as feeding, or washing the udder with warm water.

BRUCELLOSIS.—Calfhood vaccination with *Br. abortus*, strain 19 and with McEwens 45/20 vaccine is discussed. The sale of vaccinated animals showing a positive response to the agglutination test has created some practical problems. Eradication of the disease from Great Britain requires organization on a national scale.

JOHNE'S DISEASE.—As this disease is not notifiable its incidence is not known accurately. At Compton the disease was eliminated in four years by a policy of segregation; the johnin test failed to detect a high percentage of clinical cases, but gave a positive reaction in cattle infected with avian type tuberculosis. When control measures are taken it is important that young stock are not in contact with infection from older animals.

—S. B. KENDALL.

AUSTVOLL, J. (1947.) Grisedauen. [**"Pig Death"**—(a new disease among pigs).]—

See also *absts.* 662 (tendonitis and bursitis); 717 (digestive disturbances); 718 (tetany in calves); 750 (retention of placenta); 807-822 (annual reports); 824 (diseases of camels).

POISONS AND POISONING

JANEČEK, A. (1946.) Otravy fosforem ve světle dneška, se zvláštním zřetelem k otravám fosfidy. [**Phosphorus and phosphide poisoning.**]—*Čas. československ. Vet.* 1. 213-217. 723

Poisoning in domestic animals, especially in fowls, may be caused by phosphorus or zinc phosphide used in preparations for destroying rats and mice. The identification of zinc phosphide is very difficult when organs sent for chemical examination are not fresh.

For prevention of phosphorus poisoning in domestic animals J. recommends the following measures:—that all preparations containing phosphorus and including phosphorus compounds used for the destruction of rats and mice should be coloured, that they should be sold only to qualified persons and that the use of poisonous preparations should be under control of the veterinarian.—E. PŘIBYL.

VISWANATHAN, G. R. (1946.) Fluorosis of cattle

Norsk VetTidsskr. 59. 202-205.

721

A new disease is reported affecting full-grown and also growing pigs of two to three months of age. Although it appears contagious no organisms have been isolated and experimental transmission has failed. Older pigs show malaise and inappetence with no temperature and die in 3-4 days. Younger pigs may show prostration and whining and die in 5-24 hours. Less acute cases may show ocular discharge, bloody diarrhoea, pustules on the snout, mouth and tongue and swellings round the head and shoulders. P.M. lesions are confined to oedema of the large intestine, and to thickening and inflammation of both small and large intestines.

Penicillin therapy, 10,000 units at three hourly intervals produces satisfactory results. Lame and prostrated pigs showed clinical cure in three days. Nonspecific therapy with insulin, B-taxin, vigantol [vitamin preparations] and calcium gluconate was unsuccessful.—A. G. W.

MARTIN, R. (1944.) Sur la pathogénie de la paralysie ascendante à tiques. [**The nature of tick paralysis.**]—*Arch. Inst. Pasteur Algér.* 22. 125-130. 722

Arguing from evidence contained in the literature, M. discounts the idea that tick paralysis is caused by an infective agent or by a toxin. The hypothesis is put forward that the paralysis is due to reflex vasodilation in the central nervous system, following cutaneous stimulation by the tick. M. hopes to undertake experimental work to test his theory.—G. B. S. HEATH.

in the Madras Presidency.—*Indian vet. J.* 23. 4-11. 724

In the Madras Presidency, in certain villages of Nellore and Cuddappah districts a disease was observed of which the symptoms were exostosis on the ribs and swollen joints with lameness and hoof deformity. Lack of vitamin A and a deficiency of phosphorus in the diet may be contributory causes to the condition but the main factor appears to have been the presence of fluorine in the soil of the endemic areas.

—S. P. BERI.

SMITH, R. R., & SHANER, E. O. (1944.) The effects of buffered lethal doses of fluoride on guinea-pigs.—*J. Amer. dent. Ass.* 31. 1483-1486. [*Abst. in Biol. Abstr. Sect. F.* 19. 9. (1945), amended. Signed :D. C. LYONS.] 725

The fluoride was administered *per os* in water to three groups of g. pigs. Each g. pig of the first group was given two lethal doses of NaF

plus an equivalent amount of CaCO_3 and half an equivalent amount of MgO . 10 min. after administration the g. pigs were active and appeared normal and within two hours most of them were eating normally. The animals in the second group were given similar treatment, but without the MgO . Under these conditions the fluoride was again without lethal action.

The control animals each of which received a double lethal dose of sodium or potassium fluoride died within 40–60 min.

ANON. (1944.) **Cassava and its toxicity.**—*Mon. Bull. agric. Sci.* 35. 61T–62T. 726

Danger from cyanogenetic glucosides in cassava used as a human foodstuff is minimized by cutting up the roots, adding five parts per thousand of glucose and leaving for 24 hours before consumption. 60% of the hydro-cyanic acid is then converted into the less toxic glucocyanhydrin.—R. MARSHALL.

HERSHEY, A. L. (1945.) **Some poisonous plant problems of New Mexico.**—*Bull. N. Mex. agric. Exp. Sta.* No. 322. pp. 23. 727

This bulletin is a preliminary report, designed to make available information which may aid in the reduction of livestock losses within the State. The types of poisoning dealt with are:—hydrocyanic acid poisoning, associated with wild cherry, arrow grass [*Triglochin maritima*], and poison suckleya (*Suckleya suckleyana*); photosensitization, associated with sacahuista or bear grass [*Nolina texana*] and lechuguilla [*Agave lechuguilla*]; oxalate poisoning, associated with greasewood (*Sarcobatus vermiculatus*); selenium poisoning, and poisoning due to tansy mustard (*Descurainia pinnata*). The symptomatology of the various conditions, and methods of treatment and control are described.—H. PAVER.

SNOZZI, T. (1946.) **Avvelenamento di bovini causa foraggiamento con Artemisia vulgaris. [Poisoning of cattle by ingestion of Artemisia vulgaris.]**—*Schweiz. Arch. Tierheilk.* 88. 451–455. [In Italian: German summary.] 728

Artemisia vulgaris or mugwort has been used in human medicine in epilepsy and in chorea, and it is known to accelerate expulsion of the placenta in the bovine.

Owing to lack of proper foodstuff following drought, nine bovines were given forage containing a large amount of *Artemisia*. A few hours later, they were depressed, in pain, and had diarrhoea. The next day, some of the animals were recumbent, in others there was weakness and lack of control of the hind limbs. The temperature was raised and pulse very fast. There was subcutaneous oedema of the dewlap and over the sternal and lower costal regions; abundant salivation and

redness and petechiation in the mouth; colic, dysentery, haematuria and drop in milk yield.

Some of the animals recovered in about 15 days. Two were slaughtered as an emergency measure, as they had points of necrosis in the oedematous areas. On P.M. examination, there was gastro enteritis, particularly marked in the small intestine and rectum, and blood staining of the tissues.—I. W. JENNINGS.

BRINTON, D. (1946.) **An unusual form of epidemic food-poisoning with neurological symptoms.**—*Proc. R. Soc. Med.* 39. 173–175. 729

For 13 months from October, 1942, the population of Aden was intermittently affected by epidemics of food poisoning, associated with the ingestion of flour manufactured from Abyssinian wheat. The wheat contained as an impurity fungus infected darnel (*Lolium linicolum* or *L. temulentum*).

The symptoms of the condition were dizziness, generalized tremors, lassitude, slurred speech, staggering gait, and occasional gastro-intestinal disturbance. There were no deaths, and recovery of the most severe case was complete in 72 hours.

The condition did not arise in the country of origin, because of adequate sieving of the wheat prior to milling; but in Aden there was no machinery for sieving and cleaning the wheat. [The toxic principle of darnel is stated to be the alkaloid temuline and some authorities consider that darnel is poisonous only when infected by the fungus *Endocladium temulentum*.]—H. PAVER.

HOLMES, J. W. H. (1946.) **[Discussion on] Toxicology.**—*Vet. Rec.* 58. 358–360. 730

A Friesian cow three years old with a history of loss of condition and diarrhoea over a period of several weeks and four months in calf developed maniacal tendencies and was sent for casualty slaughter. The only findings on P.M. examination were enormous distension of the gall bladder, and marked cirrhosis of the liver. Ragwort was available on the farm and it is suggested that it was the cause of the illness.

Two cases are recorded of strychnine poisoning in dogs.

A male pekingese dog nine years old developed vomiting and thirst after being dressed with an insect powder containing 40% sodium fluoride. The condition cleared up after three days; the only treatment given was liquid paraffin and kaolin.

Reference was made to cases of poisoning by lead arsenate, D.D.T.; water dropwort (*Oenanthe crocata*), sulphanilamide, sugar beet, and man-golds.—H. PAVER.

PHARMACOLOGY AND THERAPEUTICS

GAUSE, G. F. (1946.) **Colistatin: a new anti-biotic substance with chemotherapeutic activity.**—*Science*. 104. 289-290. 731

An aerobic sporulating bacillus isolated from chernozem soils [the noted black earth of the steppes] was found to produce a substance, spoken of as colistatin, possessing bacteriostatic activity towards *Staphylococci*, *Pneumococci*, *Bacterium coli*, *Bact. proteus*, *Salmonella paratyphi B*, *Shigella shigae* and *S. typhi*. It was not toxic when injected into mice and possessed chemotherapeutic activity towards *Treponema sogdianum* in mice.

—R. MARSHALL.

SALLE, A. J., & JANN, G. J. (1946.) **Subtilin-antibiotic produced by *Bacillus subtilis*. II. Toxicity of subtilin to living embryonic tissue.**—*Proc. Soc. exp. Biol., N.Y.* 61. 23-24.

[For previous part see *V. B.* 16. 450.] 732

Subtilin is antagonistic to Gram positive organisms, including *Mycobact. tuberculosis* and other acid fast bacteria, and also to two Gram negative organisms, *viz.*, *Neisseria catarrhalis* and *N. gonorrhoeae*. It has a very low toxicity for embryonic chick heart tissue cultivated *in vitro*, being 20 times more toxic to *Staphylococcus aureus*.—J. M. ROBSON.

SAURAT, P. (1944.) De l'utilisation des sulfamides dans la pasteurellose aviaire. Leur association avec la vaccination. [The use of sulphonamides in avian pasteurellosis.]-*Rev. Méd. vét., Lyon et Toulouse*. 95. 106-115. 733

S. refers to a serious outbreak of fowl cholera in the neighbourhood of Toulouse in the years 1942-43. There were severe losses during the autumn and winter months following the exceptionally dry summers of 1942-43.

S. alludes to the chemotherapeutic and immunological work of LEVADITI and REINIÉ and of LEVADITI and VAISMANN in 1938 and also to that of KRANEVELD and MANSJOER in 1940 and to the satisfactory results obtained in the field of human medicine in the treatment of plague. Twenty-three experimental treatments of outbreaks of fowl cholera carried out by him are described in which there was a loss of only 1% of the treated birds when suitable sulphonamides were employed, against a loss of 17% of the untreated birds. The sulphonamides 1162 F. [sulphanilamide] and 46 RP. [benzylsulphanilamide] gave no tangible results, whereas, "dagénan" (693-M.B.) [sulphapyridine] and thiazomide (2090 RP) [sulphathiazole] were highly satisfactory.

A method of therapy based on the injection of suitable sulphonamides, followed by vaccination is recommended. A dose of 0.25 g. of sulpha-

pyridine or sulphathiazole given daily to fowls and 0.50 g. to ducks, geese and turkeys arrested the disease in infected flocks, and gave time for the preparation of an autogenous vaccine which was injected the day following the last administration of the sulphonamide.—D. S. R.

KRASIN, D. A. (1944.) [Therapeutic doses of red streptocid (prontosil rubrum) in horses.]-*Veterinariya, Moscow*. No. 1. pp. 33-35. 734

K. investigated suitable therapeutic doses of prontosil for horses. Evdokimov had given 5 g. doses in alcoholic solution intravenously with good results. For larger doses K. found glucose solution a better vehicle.

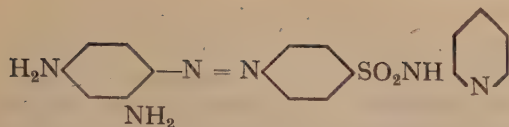
During 1941-42 200 animals were treated, with prontosil, including cases of strangles, enanthematous typhus, pharyngitis, tracheitis, bronchitis, bronchopneumonia, etc.

The drug was given *per os* or intravenously and sometimes by a combination of the two methods, intravenously in the morning and *per os* in the evening; this was especially satisfactory in prolonged treatment. Glucose solution in 5-10% concentration was normally used for intravenous injections, but when the condition was aggravated by a weak heart the concentration was increased to 25-30%. A dose of 15 g. in 650 ml. of 5-10% glucose solution intravenously produced "panting" in all and excitation of the parasympathetic nervous system in some cases. Doses of 18-20 g. intravenously were toxic. Suitable doses were 6-12 g. up to 24 g. per day. 15-30 g. doses and a total of 30-50 g. daily *per os* were non-toxic.

—E. CHERKESI.

DROBOT'KO, V. G., AIZENMAN, B. E., SHVAIGER, M. O., FEL'DSHTEIN, R. G., & CHERNYSHEVA, P. S. (1945.) K. khimioterapii brutselleza. [Chemotherapy of brucellosis.]-*Zh. Mikrobiol., Moscow*. No. 7-8. pp. 69-74. [Abst. in *Bull. Hyg., Lond.* 21. 306, copied *verbatim*. Signed: D. J. BAUER.] 735

The authors have investigated the chemotherapeutic effect of 64 sulphonamide derivatives and other compounds upon *Brucella abortus* infection in white mice. Groups of ten mice were given 10,000 organisms subcutaneously; after 7 days the test compound was given daily for ten days. Three to five days later the animals were killed and cultures of various organs were made; failure to recover *Br. abortus* was taken as an indication of chemotherapeutic activity. The following compounds were effective: (1) *Sulphonamide derivatives*; sulphanilamide, N'-p-aminophenylsulphanilamide, sulphapyridine and sulphapicoline; (2) *azo compounds of sulphanilamide*; prontosil soluble, the compound.



and an azo compound of sulphanilamide and hexamine, of uncertain constitution; (3) *sulphones*; *pp'*-diaminodiphenylsulphone, *pp'*-dinitrodiphenylsulphone, *p*-amino-*p'*-nitrodiphenylsulphone, and a diazo compound of sulphone and hexamine; (4) benzidine derivatives; trypan blue and naganin [Bayer 205].

SCHULER, W. (1945.) Die Wirkung von Penicillin auf den Staphylokokkengaswechsel im Vergleich zur Wirkung anderer antibakterieller Stoffe. [The action of penicillin on the gaseous metabolism of staphylococci in comparison with the action of other antibacterial substances.]—*Schweiz. med. Wschr.* 75. 34–39. 736

Penicillin was bactericidal towards growing *Staphylococcus aureus*: after a preliminary latent period the rate of respiration was checked on account of the death and diminished cell division of the bacteria. Penicillin had no effect upon the respiration of resting *S. aureus*. Sulphonamides appeared to have a similar effect; while they were active in reducing cell division they did not kill the organisms as was the case with penicillin: such inhibitory substances as *p*-aminobenzoic acid had no effect upon penicillin, they do inhibit the action of sulphonamides. There was no latent period for disinfectants, they were more rapid in their action than penicillin and were active upon resting organisms.—R. MARSHALL.

DOWNHAM, K. O., CHRISTIE, G. J., & HUGHES, D. L. (1947.) The treatment of *Corynebacterium pyogenes* mastitis and penicillin.—*Vet. Rec.* 59. 237–239. 737

Eleven cows affected with *Corynebact. pyogenes* mastitis were treated with penicillin in distilled water by means of udder infusions. Despite the fact that some cases were treated early, and some were given uneconomically large doses, no marked alleviation of the mastitis resulted. Very large doses of penicillin appeared to lessen the severity of the general symptoms. The causal organism is sensitive to penicillin. Treatment will be more successful when a means is devised of ensuring that the therapeutic agent can penetrate the thick pus and reach all the affected areas of the udder.—J. KEPPIE.

SLAVIN, G. (1946.) Penicillin concentration in the blood and milk of bovines.—*Proc. R. Soc. Med.* 39. 793–795. Discussion p. 795. — 738

When 200,000 units of penicillin are intramuscularly injected the blood level is high after 5 mins. (0.45 units per ml.) and drops, at first

rapidly and then more slowly. After two hrs. there is about 0.05 units per ml. One million units in 4% beeswax-arachis oil every twelve hrs. gave satisfactory blood levels; this was given subcutaneously in order to avoid muscle damage. Local treatment has given considerable success in streptococcal mastitis, less in staphylococcal mastitis and has failed in *C. pyogenes* mastitis; this last result is an agreement with the findings in *C. diphtheriae* infections. Two doses of 100,000 units were injected through the teat canal at 24 hr. intervals. After 24 hrs. the udder secretion may contain quite high concentrations of penicillin. It is emphasized that local treatment will fail unless the drug has access to all infected parts and all dead tissue is removed; intramuscular treatment may then succeed as every part of the body is reached to which the circulation has access.—J. M. ROBSON.

BERKMAN, S., HENRY, R. J., & HOUSEWRIGHT, R. D. (1947.) Studies on streptomycin. I. Factors influencing the activity of streptomycin.—*J. Bact.* 53. 567–574. [Authors' summary copied *verbatim*.] 739

Sodium chloride, potassium chloride, sodium sulfate, sodium tartrate, Soerensen's buffer, and ammonium acetate in physiological concentrations antagonized the activity of streptomycin against *Staphylococcus aureus*, *Proteus vulgaris*, *Shigella dysenteriae* (Shiga), *Eberthella typhosa*, *Bacillus cereus*, *Bacillus anthracis*, and *Bacillus subtilis*. The degree of antagonism was directly proportional to the salt concentration.

The activity of streptomycin varied inversely with the size of initial inoculum.

This effect is apparent rather than real and arises from the fact that, the larger the inoculum, the greater the number of resistant organisms present.

Evidence is presented for the presence of a weak antagonist of streptomycin in the filtrates of cultures of *S. aureus* and *P. vulgaris*. This factor appears to be of little physiological importance since it was active only in acid pH.

WOLINSKY, E., & STEENKEN, W., Jr. (1947.) Effect of streptomycin on the tubercle bacillus. The use of Dubos' and other media in tests for streptomycin sensitivity.—*Amer. Rev. Tuberc.* 55. 281–288. [Spanish summary. Authors' summary slightly amended.] 740

In tests of the effect of streptomycin on the growth of the human type of tubercle bacillus, H37 Rv, it was found that with an incubation period of sixteen to twenty days in the medium described by Dubos at pH 7.1–7.4 in a concentration of 0.05 micrograms per ml. growth was inhibited slightly; with 0.2 micrograms per ml.

there was marked inhibition of growth and with 0.4 micrograms per ml. inhibition was complete.

I. YOUNG, G. P. (1945.) **The effect of streptomycin in vitro on *Mycobacterium tuberculosis* var. *hominis*.**—*Quart. Bull. Northw. Univ. med. Sch.* **19.** 207–209. 741

II. YOUNG, G. P., & McCARTER, J. C. (1945.) **A preliminary note on the effect of streptomycin on experimental tuberculosis of white mice.**—*Quart. Bull. Northw. Univ. med. Sch.* **19.** 210. 742

I. Five highly virulent strains of human type *Mycobact. tuberculosis* were found to be equally susceptible to the bacteriostatic action of streptomycin, which was not significantly affected by the number of organisms present nor by the presence of human plasma. The bactericidal power of streptomycin for tubercle bacilli was found to be slight.

II. Microscopic examination of treated and control animals infected with the virulent H37Rv strain of *Mycobact. tuberculosis* showed that streptomycin exerts a marked suppressive effect on experimental pulmonary tuberculosis in white mice.—E. V. L.

FLORMAN, A. L., WEISS, A. B., & COUNCIL, F. E. (1946.) **Effect of large doses of streptomycin and influenza viruses on chick embryos.**—*Proc. Soc. exp. Biol. N.Y.* **61.** 16–18. 743

A total of 12,000 units of streptomycin given over a period of 24 hours failed to protect chick embryos against the multiplication of three different strains of influenza virus. Despite the very large amounts of streptomycin administered, there was no evidence of any lethal effect on the developing embryo.—J. D. BLAXLAND.

GRIBANOV, V. N., & SMIRNOV, I. A. (1937.) **Deutoplasmin pri kolibatsilleze telyat. [“Deutoplasmin”, a product of coliform organisms, in the prophylaxis and treatment of calf scours.]**—*Trud. vsesoyuz. eksp. Inst. Vet.* **14.** 151–155. [French summary.] 744

“Deutoplasmin” obtained by washing one-day-old agar plate cultures of *Bact. coli* with 0.2% NaOH in saline, incubating at 37°C. for 24 hours and heating at 70°C. for one hour was tested on experimental animals, and caused no harmful results. *In vitro* it had a strong inhibitory effect on cultures of *Bact. coli*. It was administered *per os* after 12 hours starvation, a feed being given half an hour after the first dose, then three times daily before feeds; the doses were 15–20 ml.

On one farm 30 young calves were treated—all recovered.

For prophylaxis the newly born were given a dose before being allowed the first colostrum, and subsequently three times daily in doses of

10–15 ml. The authors claim that this is one of the best methods of controlling calf scours.—O. U.

ROBERTS, R. S. (1946.) **The prophylaxis of bovine blackquarter.**—*J. comp. Path.* **56.** 128–138. 745

A method of assay of the immunizing properties of preparations used for immunization against blackquarter has been developed by R., which is based on the degree of protection established in g. pigs. For the assessment of the resulting immunity, a suspension of *Cl. chauvei* spores is injected along with CaCl₂ solution as an activator. The standard method of challenge developed was to inject intramuscularly 0.1 ml. of standard spore suspension with an amount of 5% CaCl₂ solution such that 80% of normal g. pigs die. When miscellaneous commercial and laboratory preparations were assayed as above, seven out of nine formalized culture vaccines were satisfactory, one out of five samples of culture filtrate was satisfactory, and all three pellet vaccines tested were useless.

R. suggests that some uniformity of antigenic agents is desirable and proposes that only formalin killed whole culture and culture pellets should be used, and should be tested as above. The preparation of a new pellet vaccine is described.—R. S.

BRAGAGNOLO, G. (1942.) **Ricerche sul potere antibatterico dell'olio di fegato di tonno iper-vitaminico. [Study of the antibacterial property of tunny fish liver oil of high vitamin content.]**—*G. Batt. Immun.* **28.** 299–319. [Abst. from English summary; French & German summaries.] 746

It is stated that tunny fish liver oil has a high vitamin content (vitamins A and D), and that it has bactericidal action. After heating to 130°C. for two hours antibacterial properties were undiminished.—E. V. L.

ROSENTHAL, W., & ORTEGA, J. A. (1942.) **Control microanalítico rápido de soluciones garrapaticidas arsenicales. I. Importancia y dificultades del control analítico. [Rapid micro-analytical control of arsenical dips. I.]**—*Rev. Med. vet. Parasit., Caracas.* **4.** 45–58. 747

The authors give details of a simple chemical test for determining the amount of arsenic in a dip utilizing iodine and starch. [Compare field test as used in S. Africa by farmers (GREEN, H. H. 3rd and 4th Rep. Div. Vet. Res. Onderstepoort. 1915. pp. 199–214).]—I. W. JENNINGS.

DYRENDAHL, S. (1945.) **DDT (“Alltox”) som medel mot ohälsa hos djur. [Value of D.D.T. against ectoparasites (lice, fleas) of animals.]**—*Skand. VetTidskr.* **35.** 202–210. [Abst. from English, German and Swedish summaries.] 748

A D.D.T. preparation named “Alltox” was effective against adult forms of *Hematopinus asini*,

H. suis, *Linognathus* spp. of cattle and also against *Ctenocephalus canis*. It had no effect on the eggs.

—E. V. L.

LUDFORD, R. J. (1945.) **Colchicine in the experimental chemotherapy of cancer.**—*J. nat. Cancer Inst.* 6. 89–101. [Author's summary copied verbatim.] 749

Colchicine arrests cell division by preventing the formation of the mitotic spindle. It is impossible to inhibit mitosis of malignant cells without simultaneously effecting the same action on other dividing cells of the organism.

Colchicine causes vascular damage to rapidly growing tumors, since endothelial cells of newly formed capillaries are particularly sensitive to mitotic poisoning.

Regression of tumor growth followed by recurrence has been reported after treatment of the drug in domestic and laboratory animals and in man.

Complete regression of some animal tumors has been induced by employing doses of the drug far in excess of those required to arrest mitosis, and just short of the minimum lethal dose.

Evidence has been adduced that when regression of tumor growth occurs, it is primarily the result of vascular damage.

Less toxic derivatives of colchicine that have been investigated have not possessed any advantage since proportionately larger doses were required to produce similar clinical results. In general, the greater the alteration in chemical structure, the less active is a derivative in inducing tumor regression.

Preliminary treatment with colchicine has not been found to increase significantly the radiosensitivity of tumors.

CEBOCI, F. (1945.) Liječenje goveda kalcijem kod zaostajanja posteljice. [**Calcium therapy for retention of the placenta in cows.**]—*Vet. Arhiv.* 15. 139–160. [Abst. from French summary.] 750

Russian authors have recorded success from the intravenous injection of 20–25 g. of calcium chloride in solution given at the earliest, 24 hours after delivery.

Of 18 cows with retained placenta which had been so treated, in eight the placenta came away 2–4 days after injection; it was removed manually from six after 3–4 days, detachment being easy and rapid in each case; in four there was decomposition of the placenta and vaginal discharge 6–8 days after injection. From the results C. concludes that the treatment was efficacious.—F. E. W.

PIERCY, S. E. (1946.) **The antidotal treatment of arsenical poisoning.**—*J. comp. Path.* 56. No. 4. 237–245. 751

In preliminary work on the estimation of a standard lethal dose, it was found that 0.5 g. As_2O_3 per 100 lb. body weight, administered as a drench in the form of a solution, caused the death of healthy young steers after about three and a half days. This dose was employed in the assessment of the value of antidotal treatment.

Ferric hydroxide freshly precipitated by the addition of sodium bicarbonate to a solution of ferric chloride and given as a course of three doses at 20 min. intervals by drenching, followed one hour later by a purgative, was effective in preventing death only when treatment was commenced not more than five minutes after the administration of the poison.

Sodium thiosulphate given to steers varying from 190 to 613 lb. in weight, in doses of 12–24 g. by mouth, and in quantities of 2.0–5.6 g. by intravenous injection, the doses being repeated up to four times at varying intervals, was effective in preventing death when treatment was commenced at periods varying from a few minutes to 12 hours after the administration of the poison.

Sodium thiosulphate treatment failed when commenced 18 hours after ingestion of the poison. Both forms of antidotal treatment were ineffective when applied almost immediately after the administration of five times the standard lethal dose of sodium arsenite.—H. PAVER.

LOGIUDIĆ, C. N., & ARANES, G. M. (1946.) La anestesia por gases en los animales domésticos. (Publicación preliminar.) (Segunda publicación.) [**Gas anaesthesia for domestic animals. I & II.**] pp. 33. [English, French & German summaries.] La Plata: Facultad de Medicina Veterinaria, Universidad Nacional. 752

The authors describe the induction of anaesthesia in 30 different domestic animals. Cyclopropane was the anaesthetic mainly used, either alone (20 cases) or in combination with nitrous oxide, ethylene or ether. Other anaesthetics used were ethylene, ethylene and ether, and nitrous oxide and ether. Of these, the authors favour cyclopropane alone, for cats, dogs, goats, sheep, swine and horses.

Premedicating agents employed were atropine, alone or with morphine or chloral. For the cat, atropine alone is sufficient; for the dog atropine with morphine is better.

McKesson's apparatus was found to be suitable for giving the anaesthetic to small animals, but it requires modification for large animals. Two of the three failures in horses in this series of cases were due to the fact that the apparatus was not sufficiently large for the respiratory volume of the patients. A contributing factor to these failures is stated to have been the administration of morphine alone as a premedicating agent,

The authors describe an adaption of McKesson's apparatus for use with large animals, and describe successful anaesthesia in 15 horses and one bovine with cyclopropane and oxygen. The premedicating agent in all these cases was intravenously administered morphine-atropine solution.—ISOBEL W. JENNINGS.

TATERKA, W. (1946.) Leistungssteigernde Wirkung von PHOS (Natrium α -oxybenzylphosphinicum) bei Brieftauben. [Stimulating action of phos (sodium α -oxybenzylphosphinicum) in carrier pigeons.—*Schweiz. Arch. Tierheilk.* 88. 424-425. 753

Sodium α -oxybenzyl-phosphinicum administered either alone or with vitamin C is stated to increase the growth rate of pigeons, to hasten the healing of wounds, and to be useful in treatment of infestation with *Capillaria columbae*.

It is stated to improve the flying speed of racing pigeons.—P. SASSE.

FLOREY, M. E., ROSS, R. W. N. L., & TURTON, E. C. (1947.) Infection of wounds with gram-negative organisms. Clinical manifestations and treatment.—*Lancet*. 252. 855-861. 754

The effect of infection with Gram-negative organisms was observed in 63 cases of lacerated wounds, mostly involving compound comminuted fractures, with particular reference to interference with repair of tissues and toxæmic effects, and to chemotherapy.

It was not possible to compare the progress of wounds containing Gram-negative bacteria with that of a comparable number of wounds in which these organisms were not present; 51 out of 56 which could not be closed by secondary suture harboured one or more species of Gram-negative bacteria from the second week after wounding.

In the early stages, the consequences of infection with Gram-negative organisms did not appear to be severe, but their persistence had serious consequences; these were:—persistent sinuses and discharges, delayed healing, lysis of blood clots, and interference with bony union. A

See also absts. 639 (*Streptococcus pyogenes* filtrates); 641 (tuberculosis); 645 (streptomycin and TB.); 647 (mycoidin and TB.); 683 (cocci-diosis); 782 (penicillin production).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

— (1947.) Human water requirements.—*Brit. med. J.* May 31st. 774. 755

This is a synopsis of a paper given by K. Mellanby, read to the Nutrition Panel of the Society of Chemical Industry, discussing the evolution of methods of disposal of the waste products of protein metabolism necessitated by the development of terrestrial organisms from marine forms. The results are given of some experiments made during the war on volunteers who went from

disconcerting feature was the ability of epithelium to grow over the mouths of sinuses, giving the appearance of a quiet fracture-site, without pain, tenderness or redness; evidence that infection still existed, was shown only by lack of callus formation revealed by radiography, or by the later development of sinuses. The Gram-negative organisms present in the wounds, were *Bacterium coli*, *Proteus*, and *Pseudomonas pyocyanea*, in surface lesions, these organisms often being overshadowed by the presence of *Staphylococcus aureus* which retarded their eventual appearance. No real evidence was obtained, that Gram-negative organisms alone produced toxæmic effects.

Agents used in various ways to combat Gram-negative organisms were:—streptomycin, kojic acid [an antibiotic stated to inhibit *Bact. coli* and *Proteus* at 1:400], sulphathiazole, sulphamethazine, proflavine, phenoxetol, aminophenol, eusol, milton, and penicillin.

Streptomycin was the most effective in removing *Bact. coli*, *Ps. pyocyanea*, and *Proteus*, both rapidly and permanently in a few wounds. Sulphathiazole was effective in eliminating *Bact. coli* and *Proteus* to a lesser degree; sulph methazine had a similar effect on *Bact. coli* and *Ps. pyocyanea*.

Eusol and milton appeared to have a good effect on *Ps. pyocyanea*.

Neither surgical treatment, nor enclosure in plaster, had any pronounced influence on Gram-negative organisms. The presence of *Staph. aureus* in the wound was almost as effective as the two sulphonamides in reducing the Gram-negative population, neither did daily applications of penicillin with its eliminating effect on *Staph. aureus* appear to increase their number, when they were the only organisms present. The differential action of most agents is appreciated, whereby they inhibit one species of bacterium more than another; clinical experience indicates that the combined use of the sulphonamides, with penicillin, or the use of streptomycin can sterilize persistent sinuses, so that they heal rapidly.—J. G. B.

Tuesday evening to Saturday morning on a dry diet with no water. Urine output fell to 0.5 l. per day. If small amounts of water were taken there was no noticeable effect on urine output; it was not until 1 l. of drinking water was taken that any real effect was obtained. Results obtained in German concentration camps indicated that death occurred usually after 14 days when no water was drunk.

Arguing from the analogy of the camel and

desert mouse which store fat in the hump and tail respectively it has been suggested that under conditions of water deprivation it was better to eat fats than carbohydrates because of the amount of metabolic water produced, but to breathe the extra amount of oxygen required for oxidation of fats involved a greater loss of water from the lungs which would outweigh the extra "metabolic" water produced.

M. concluded that man requires an intake of 500 ml. of water over his output in order to get rid of his harmful waste metabolites.—M. C.

ANON. (1946.) **Mechanism of pain.**—*Lancet*. 251. 461-462. 756

Three essential parts are concerned, namely, the sensory nerve ending or receptor, the nerve fibre or conductor and the brain or cortical analyser. Receptors are numerous in skin, plentiful in deep fascia and muscles, few in subcutaneous tissue: parietal peritoneum is well supplied, visceral peritoneum and viscera apparently not at all: periosteum and ligaments are sensitive, spongy bone slightly so, compact bone and joint surfaces are insensitive: arteries have more receptors than veins, meninges have many, but brain is without any. The quality of pain is the same however the receptor is stimulated.

The analytical function of the brain as regards intensity of pain is markedly influenced by emotional states, thus the exaltation of pain by apprehension. Skin pain can be localized accurately but pain from viscera or other deep structures cannot be located accurately and might be referred to the nervous segment rather than the organ of origin. The reason may well be that in the case of the skin the brain is continually being educated by stimuli from areas known visually or otherwise, whereas this is impossible in the case of deeper structures.—R. SCARISBRICK.

PARODI, F. (1942.) *Elettrobiogenesi e stati patologici. Storia dell'evoluzione del piano delle nostre ricerche.* [**Electrobiogenesis.**]—*Lotta c. Tuberc.* 13. 87. [Abst. in *Amer. Rev. Tuberc.* 52. No. 3. p. 63 of absts. (1945). copied *verbatim*. Signed: G. SIMMONS.] 757

Blood is an electric complex in which energy originating in the outside world is accumulated and transformed. In the healthy individual the blood has a negative charge. In the sick organism the difference between the electric charge of the blood and that of the tissues is smaller than in the healthy individual. Health and disease are expressions of this changing dielectric state of the blood constituents. The basic principle in all diseases is the difference in the electric potential and treatment should be directed toward improving the dielectric state of the organs and their

ionization. Contrary to Tschejevsky, who thinks that the decrease in the electric charge in the sick individual is due to an insufficient amount of ions present in the environment (and who consequently tries to increase the ion concentration of the environmental air to obtain therapeutic results), Parodi tries to explain this phenomenon on the basis of an impaired absorption of ions and an increase in their dispersion, caused by changes in the electric-chemical structure of the blood. Whereas Tschejevsky assumes that the ions penetrate into the body through the lungs, Parodi feels that the electric field of the blood and skin is important.

SCHMITT, G. (1944.) *Das Wärmehaltungsvermögen der Angorakaninchen.* [**Heat conservation in Angora rabbits.**]—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* 52/50. [No. 39/40.] 372-373. 758

Angora rabbits with fur 7-8 cm. long were shorn to one cm. and subjected to low temperatures of from -3° to $+6^{\circ}\text{C}$., when the body temperature fell by 10% of its normal value. Lowering of body temperature occurred even when the room temperature was normal (15° - 23.5°C .). It is thus essential to keep shorn Angora rabbits in a warmed atmosphere in winter weather.

—R. MARSHALL.

NEUMANN-KLIENPAUL, K., & SCHÜTZLER, G. (1940.) *Untersuchungen über Druckmessungen, Ruptur, Fassungsvermögen und Gewicht am Magen des Pferdes.* [**Investigation of pressure measurements, rupture, capacity and weight of the stomach of the horse.**]—*Arch. wiss. prakt. Tierheilk.* 75. 370-386. 759

The capacity of the stomach varied from 13.5 to 37.5 l.; the maximum internal pressure tolerated was not related to its capacity. With increasing age the stomach is more susceptible to rupture. The rupture begins in the muscle layer and then extends to the mucous membrane, the position of the tear being in the fundus region and parallel to the greater curvature.

In normal horses the internal pressure in the stomach is about 10 g. per sq. cm.; in tympany and with overfilling 50 g. per sq. cm. was attained.

A gaseous pressure of from 55 to 169 g. per sq. cm. with a mean of 98 g. per sq. cm. was sufficient to rupture the stomach.—R. MARSHALL.

LIENHART, R. (1946.) *Remarques à propos de la couleur de la coquille des oeufs des poules domestiques.* [**The colour of the shell of hen's eggs.**]—*C. R. Soc. Biol. Paris.* 140. 541-543. 760

L. discusses the origin of present day breeds of fowls which lay tinted and brown eggs. The Mediterranean breeds such as Leghorns and

Minorcas, etc., lay white eggs. L. states that prior to 1843 these were the only breeds of fowls in western countries. In that year fowls from Shanghai, later known as Cochín Chinas, were sent to Queen Victoria. These laid brown or reddish eggs. L. believes that all the present day brown or tinted egg breeds are derived from the Cochín China breed.

The brown pigment in the egg is porphyrin; it is soluble in oxalic acid and L. found that 48 hours after feeding leaves of wood sorrel (*Oxalis spp.*) to fowls of the brown egg laying breeds their eggs were white in colour.—M. C.

DORMANN, J. (1944.) La porphyrine comme pigment de la coquille d'oeufs de la poule. [**Porphyrin, a pigment in the egg shell of fowls.**]—*Rec. Méd. vét.* 120. 37-40. 761

In studies on porphyrins in shells of birds' eggs Fischer and Kögl (1924) used the eggs of sea-gulls and lapwings as they are rich in these physiological pigments. The colouring matter was extracted by D. from the shells of hens' eggs by two similar methods. The porphyrin content of the hen's egg was smaller than that of the eggs of these other two species. The pigment was red, with no indication of the presence of green or blue pigments as in the other two species.

—R. MARSHALL.

BERGAMINI, L. (1943.) Studio sull'enzima mucinolitico dello stafilococco. [**Mucinolytic enzymes of staphylococci.**]—*G. Batt. Immun.* 30. 669-692. [Abst. from English, French & German summaries.] 762

The antifibrinolytic capacity of the blood of healthy children and of children in various pathological conditions was examined. A high antifibrinolytic capacity was found in acute tonsillitis (77%), scarlet fever (84%) and glomerulonephritis (84%), and in all cases of acute articular rheumatism investigated by the author. No antifibrinolytic activity was found in non-streptococcal diseases. It is concluded that a large amount of antifibrinolysin in the blood is a sign of a good reaction capacity of the body, but that this is not related to antistreptococcal immunity.

—E. V. L.

PEETERS, G., & MASSART, L. (1947.) **Implants of synthetic oestrogens in the udders of sheep.**—*J. Endocrinol.* 5. 166-169. 763

Satisfactory lactation, occurring 9-15 days after implantation, was induced in virgin sheep implanted with a 50 mg. stilboestrol tablet in the udder. Less satisfactory results were obtained with 100-150 mg. and with implantation of 50-100 mg. in the neck. Although the implantations in the udder were all made in the right half, the response was uniform in both halves.—J. M. R.

Jošić, M. (1944.) Prilog poznavanju kvantitativne i kvalitativne krvne slike topiokrvnjaka. [**The blood picture of the light horse.**]—*Vet. Arhiv.* 14. 220-236. [Abst. from German summary.] 764

The normal blood picture of 40 army horses (20 geldings and 20 mares) was examined in regard to the influence of breed, sex, age, condition, performance, rations, altitude above sea level, physiological data etc.

There were 22 Arab cross breds and 18 Lippizane cross breds. Ages varied from 3-18 years (average 7.45); the mares were 4-12 years (average 7.35) and the geldings 3-18 (average 7.55) years old. There were 21 animals under six years and 19 over six years.

Blood samples were taken from the jugular vein at the same hour twice every other day and Schilling/Arneth counts were made. Results revealed the average erythrocyte count of mares and geldings taken together was 7.665 ± 0.088 million per cmm.; leucocytes 8.320 ± 0.161 thousand per cmm. No significant difference was established between counts for mares and geldings or between counts for different age groups, or for different breeds, but the blood picture appeared rather more stable in geldings than in mares.

—K. J. S.

VALDÉS, A. R. (1944.) Contribución al estudio del ión hierro normal en la sangre de caballos y vacunos. [**The normal concentration of iron in the blood of horses and cattle.**]—*Agríc. téc., Chile.* 4. No. 1. 72-77. 765

The following was the iron content of whole blood of clinically healthy horses and cattle, expressed in mg. of iron per 100 ml. of blood:—horses, average 43.22, range 30.49-49.40; mares, average 43.81, range 31.37-59.52; cows, average 45.78, range 39.00-57.38; steers, average 52.15, range 50.00-58.67; bulls, average 43.59, range 40.39-47.29; oxen, average 48.23, range 39.60-54.21. [The ages of the animals are not given.]

—I. W. JENNINGS.

SOARES, I. F. (1946.) Acerca da artéria carótida interna de Beauregard. [**The internal carotid artery in the ox.**]—*Rev. Med. vet., Lisboa.* 41. 129-145. [English and French summaries.] 766

An examination was made of the minor branches of the common carotid artery of 100 Portuguese cattle of varying ages, breeds, and sex, to establish whether an artery corresponding to the internal carotid artery of other species exists in cattle.

S. traced one particular branch to the reté mirabilé and thence to the cerebral arteries. This artery which was found to have a constant path in all subjects is described and illustrated. The

vessel was patent in all age groups with an external diameter of less than two mm. S. concludes that the bovine has a true internal carotid artery.

—R. J. FITZPATRICK.

BEVANDIĆ, M. (1948.) Područje prednje hemoroidne vene u rektumu kod svinje. [*Area drained by the vena haemorrhoidalis cranialis in the rectum of the pig.*]—*Vet. Arhiv.* 13. 186–198. [Abst. from German summary.] 767

X-ray technique using a linseed oil/red lead injection was applied to determine the extent of the haemorrhoidal veins in the rectum in a study related to the rectal administration of arsenical drugs to pigs.

The results indicated that in the pig, blood is drained from the rectum only by the vena haemorrhoidalis cranialis belonging to the portal vein circuit. The vena pudenda interna has a branch that serves for the ventral section of the anal canal muscles; this most probably corresponds to the vena haemorrhoidalis media. No vein corresponding to the vena haemorrhoidalis caudalis could be detected. It is concluded that substances absorbed in the rectum of the pig are conducted only by the vena haemorrhoidalis cranialis into the portal vein circuit and pass through the liver.

—K. J. SINCLAIR.

— (1946.) *Discussion on digestion in the ruminant.* [Summarized.] Speakers: DU TOIT, P. J., ELSDEN, S. R., PHILLIPSON, A. T., OWEN, E. C., BROWNLEE, A., MALPRESS, F. H., & GOULD, G. N.—*Proc. R. Soc. Med.* 39. 80–2 806. 768

Ruminants can digest 50–70% of the insoluble material in the diet, *viz.* cellulose, hemicellulose and pentosans, by means of fermentation by micro-organisms. They obtain volatile fatty acids, B group vitamins and micro-organisms. The volatile fatty acids consist of acetic, propionic and butyric acids in the proportion of 70 : 20 : 10; they are absorbed through the wall of the rumen and metabolized. At least 0.17 of the animal's calorific requirements are obtained in the form of volatile fatty acids and the contracting heart can utilize acetic acid as fast as it consumes glucose. Micro-organisms on the rumen probably synthesize proteins which may be used by the animal, but this question requires further investigation. Little is known about the micro-organisms responsible for the changes in the rumen but two seem important, *viz.* an iodophile coccus and members of the genus *Propionic bacterium*. A remarkable feature is that bacteria detrimental to the host do not flourish in spite of the fact that conditions for anaerobic bacterial growth are ideal. It is possible that when the diet is changed, the stability of the flora is upset and bacteria detri-

mental to the host make their appearance. The condition known as "bloat" is one instance in which this may be happening.—J. M. ROBSON.

PERL, A. (1943.) Rentgenska slika probavnog trakta zdrave kokoši. [*The X-ray picture of the digestive tract of the healthy fowl.*]—*Vet. Arhiv.* 13. 265–289. [Abst. from German summary.] 769

Without a barium sulphate feed the outlines of the crop and gizzard can be seen by X-ray, but the intestines and cloaca do not show up well if distended by gas. By using barium sulphate feed, all parts of the digestive tract of the fowl can be rendered visible by X-ray. The cervical portion of the oesophagus can be examined only by following the passage of the contrast, using a phosphorescent screen. By the use of the screen, the division of the crop into two bilateral sacs can be observed, also the method of filling and emptying and the contractions.

Considerable detail is given concerning individual parts of the alimentary tract.—K. J. S.

KJEMS, H., & PEDERSEN-BJERGAARD, K. (1942.) Choriongonadotropin und Anaphylaxie in vivo. [*Chorionic gonadotropic hormone and anaphylaxis "in vivo"*].—*Arch. exp. Path. Pharmac.* 199. 188–195. 770

The ability of two preparations of chorionic gonadotropin of different purity to produce anaphylactic shock in the g. pig was investigated. By varying the sensitizing and shocking doses and by other studies it was shown that the antigen in the two preparations was identical, but present in different amounts and that the antigen was not the gonadotropin *per se*, but an impurity associated with the gonadotropin. The gonadotropin with the higher antigenic activity had undesirable secondary effects when injected intramuscularly into women. It is concluded that preparations of chorionic gonadotropin should not only be standardized for their hormonal activity but that their antigen content should not exceed a stated limit.—ALFRED T. COWIE.

BURKHARDT, J. (1947.) *Anoestrus in the mare and its treatment with oestrogen.*—*Vet. Rec.* 59. 341–342. 771

Two types of anoestrus in the mare are described:—deep anoestrus occurring from November to February, associated with hypoplastic ovaries, dry blanched vagina, and a pale constricted cervix; and shallow anoestrus generally occurring in the breeding season associated with "spongy" ovaries with follicles up to 2.5 cm. in diameter, the vagina being pale pink.

Hormonal treatment of deep anoestrus proved unsuccessful and better dietetic standards are recommended for such cases. Eleven of 18 cases

of shallow anoestrus were successfully treated with stilboestrol, 5-15 mg. in oil injected subcutaneously. The mares came into oestrus within 48-96 hours. If ovulation did not occur naturally it was induced by an injection of 1,500 i.u. chorionic gonadotropin ("pregnyl"). The mares were mated during the induced oestrus and nine became pregnant.

B. recommends that the oestrogen should not be injected until rectal examination reveals follicles of at least three cm. diameter and that the dose of stilboestrol should not exceed 15 mg.

—ALFRED T. COWIE.

TANABE, T., & SALISBURY, G. W. (1946.) **The influence of age on breeding efficiency of dairy cattle in artificial insemination.**—*J. Dairy Sci.* 29. 337-344. 772

The authors analyse the records of the New York Artificial Breeders' Co-operative Society over a four year period and relate breeding efficiency to age in Holstein-Friesian cows.

Only females listed in the Herd Book were considered, in order to be certain as to age. 12,621 conceptions are reported of which 8,350 were first service and 4,271 were second service. Subsequent services were ignored. Semen for use was taken under regularly reproduced conditions and 7-10 days' rest was allowed between each collection. The conditions for insemination, transport of sperm, etc., were not under control. The bulls used were 41 Friesians, their ages varying from 1 to 12 years. The percentage of conception was 48.2%, equivalent to 2.07 services per conception and this result is discussed.

The rates of conception for yearly age groups from 1-12 years are tabulated and range from 51.6% in four-year-old cows to 42.7% in yearling heifers. Breeding efficiency reached a maximum after 2-3 gestations; it was maintained for three years and then declined slowly. Cows less than five years old had higher conception rates on first service than on second service but in cows over five years old the reverse occurred.

Age had less effect upon the fertility of bulls but young bulls were superior to old bulls, two years being the best age-group. Within any age group the individual variations greatly overshadowed the age effects.—R. J. FITZPATRICK.

KREDIET, G. (1940.) **Pathologische Intersexualität. Eine vergleichend biologische Untersuchung. [Pathological intersexuality: a comparative biological investigation.]**—*Arch. wiss. prakt. Tierheilk.* 75. 291-335. 773

A discourse on the role of genetic, embryological and hormonal factors in hermaphroditism with particular emphasis on the types of hermaphroditism associated with tumours.—A. T. C.

NETTER, A., & BOURGEOIS, P. (1941.) **Effet de la testostérone et de la castration sur le shock splanchnique et l'immunité. [The effect of testosterone and of castration on shock and on immunity.]**—*C. R. Soc. Biol. Paris.* 135. 658-660. 774

The authors find that the injection of testosterone propionate has a protective action against the shock produced in g. pigs previously sensitized with horse serum when 0.1 ml. of horse serum is inoculated around the left splanchnic nerve.

The same protective effect could be produced by castration, which in the authors' opinion, is due to the equally protective action of the hormone of the adrenal cortex which becomes hypertrophied as the result of castration.—R. COOMBS.

DE MAN, T. J., & BOS, K. (1946.) **Over de beïnvloeding van den leg bij kippen door geïodineerd caseïne. [The influence of iodinated casein on the laying capacity of chickens.]**—*Tijdschr. Diergeneesk.* 71. 755-764. [Abst. from English summary.] 775

Details of tests carried out over a period of 16 weeks are given; the egg production of chickens supplied with iodinated casein increased by approximately 20%.—E. V. L.

ANON. (1945.) **Role of allergy in delayed wound-healing.**—*Brit. med. J.* Dec. 29th. 927-928. 776

Causes of delay in wound healing are discussed. Some cases of poor wound healing are not due to low protein or low vitamin C in the diet. Experiments strongly suggest that they are not due to hypersensitivity to catgut: very large amounts have to be administered to animals to produce this. Wound healing was, however, poor in rabbits previously sensitized to a foreign protein and injected with this antigen during the process of wound healing. In such wounds few fibroblasts are present and it is suggested that macrophages are stimulated to produce antibodies and are therefore not converted to fibroblasts, which are necessary for normal healing. Antigen-antibody reactions may occur at a site of injury if sepsis is present elsewhere in the body and in such cases particular care should be given to the suture and support of operative wounds.

—J. M. ROBSON.

CILIGA, T. (1940.) **O topografsko-anatomskim i funkcionalnim odnosima ždrijela kod konja. [The pharynx in the horse.]**—*Vet. Arhiv.* 10. 416-455. [Abst. from French summary.] 777

The structure of the pharynx and of adjacent bones, glands, muscles and mucous membranes is described in detail, with an illustration. The

mechanism which separates air and food supply is shown to be very complex. The functions and

relationships of the separate parts are outlined.

—K. J. SINCLAIR.

See also absts. 679 (ruminant digestion); 826 (Atlas of microscopical anatomy of the rat).

PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

HILLESUND, C. M. (1947.) Undersøkelser over bakteriennholdet i maskinmelket melk. [Examination of the bacterial content of milk obtained by machine milking.]—*Norsk. VetTidsskr.* 59. 131–148. [Abst. from English summary.] 778

The examination was made in order to determine the effectiveness of different methods of washing milking machines. The usual methods did not ensure effective sterilization. H. recommends that rubber tubes should be boiled in glycerine solution. Milk obtained by machines which have been carefully washed and sterilized has a very low bacterial content.—E. V. L.

— (1948.) A industrialização de produtos de origem animal. [Development of products of animal origin in Brazil.]—*Bol. Minist. Agric., Rio de J.* 32. No. 9. 145–146. 779

In the Brazilian Ministry of Agriculture a division for inspection of products of animal origin exists. Five inspectors are charged with superintending meat and milk, and their products, from the sanitary point of view and in the actual process of manufacture. The division is also concerned with the structure of abattoirs, refrigeration plants, dairies and allied types of factories.

—I. W. JENNINGS.

REPRODUCTION AND REPRODUCTIVE DISORDERS

PETERS, H. (1943.) Zum Technik der Spermauntersuchung beim Hunde. [Examination of the semen of dogs.]—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* August 6th. 253–258. 780

Otherwise healthy dogs may temporarily have oligospermia or aspermia so the author advocates routine examination of the semen before service.

Reference is made to the influence of age, climate, breed and season on the sexual system and the frequency of service possible without causing injury. The highest number of spermatozoa is present in the second and even third ejaculation at intervals of only half a day.

The technique of collecting, staining and counting spermatozoa in a sample of semen is described in detail. A formula for a diluting and immobilizing fluid is given and the estimation of density, total number of spermatozoa and the appearance of the ejaculates are discussed.—C. A.

SCHUBERT. (1944.) Fortpflanzungsstörungen im Alpenland. [Reproductive disorders in the Alps.]—*Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* March 31st. 107–109. 781

A very interesting account is given of the work of three sterility specialists in a small alpine district of Austria. Most of the examinations and the treatment took place at 20 collecting centres

where facilities for meticulously clean work were available; all the animals were brought to these places by their owners at dates fixed beforehand. The farmers much appreciated this service and were prepared to follow the instructions given.

During 1943, altogether 7,544 cows and 424 mares were examined and 4,870 cows and 276 mares received treatment. According to reports from the owners the results were satisfactory with 80–90% of the treated animals. Treatment in the animals' own stables took place only when there was an extensive infection with *Br. abortus* or *Trichomonas*, or an unspecified sterility affecting many animals.

Ovarian lesions were present in only 5% of the cases presented. There was metritis in about 60% of the cases and this was treated by uterine irrigation with Lugol, Pregl's iodine solution [see also *V. B.* 17. 389] or by introduction of "entozon" rods.

Trichomonas infection was increasing in importance and was treated also by uterine irrigation and general hygienic measures. Generally Albrechtsen's method as improved by Benesch was followed.

Mares were treated with success on similar lines, but the prognosis is bad when the cervix is very dilated.—C. AHARONI.

See also absts. 657 (orchitis in rams); 715 (vitamin A deficiency in sows); 771 (anoestrus in mares); 772 (age and breeding efficiency); 773 (intersexuality).

TECHNIQUE AND APPARATUS

STONE, R. W., & FARRELL, M. A. (1946.) Synthetic media for penicillin production.—*Science*. 104. 445–446. 782

Minerals essential for penicillin production

were phosphorus, sulphur, iron, potassium, magnesium, zinc and copper and a potassium : sodium ratio greater than one was desirable. Lactose was the best source of carbohydrate, some form of

which was essential. Of organic acids tested acetic acid gave the best results and amino or ammonium nitrogen was required. The control of pH was especially important and was kept between 6.5 and 8.2 by adjustment of the content of organic acid and sugar and of buffers, or by addition of acid or alkali during penicillin production. Phenyl acetic acid, phenylacetamide, phenylethylamine, cysteine, cystine and *L*-leucine stimulated penicillin production. The yield of penicillin was less than in "corn steep" media, but the purity of the medium made extraction of a pure product easier.—R. MARSHALL.

BAREA, D. J. (1944.) Sobre algunos métodos de cultivo de ultravirus. [Some methods for the cultivation of viruses.]-*Zootecnia, Cordoba*. 5. 29-35. 783

A brief description is given of the use of the fertile hen egg and of living tissue suspensions for the propagation of viruses without reference to any virus in particular. No new information is given.—W. M. HENDERSON.

ROOTS, E. (1944.) Die Herstellung von Bakteriennährböden aus trypsinverdaulichem Fleisch. [Trypsin digest culture media.]-*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* 52/50. 139-141. 784

Experience has not supported the claims of Liebmann that culture media prepared with a yeast extract are in many ways superior to meat broth and peptone culture media.

Trypsin digest media (both solid and fluid) give good results with *Streptococcus pyogenes*, *Brucella abortus*, bacteria of the coli-paratyphoid group and *Corynebacterium diphtheria*; results with *Str. pyogenes*, *Str. agalactiae* and *Corynebact. pyogenes* are especially good.—E. CHERKESI.

CHRISTIAN, J. E., & NEUROTH, M. L. (1946.) A new sterile technic for preparing agar cup-plates.—*Science*. 103. 172-173. 785

Short pieces of glass rod are stood in the agar plate before the medium has hardened, so that when a heating element is placed later on each piece of glass rod, the agar round it melts: when the rod is removed a cup remains which is suitable for holding ointments and creams to be tested for their bactericidal properties. The heating element consists of a spiral of resistance wire attached to a glass tube; a suitable temperature can be obtained with 8-10 volts through a transformer connected to the mains and several cups may be prepared in each plate. The test organism may be included in the agar from which the plate is poured, or may be included in a thin layer of agar added to the plate after the cups have been prepared and filled.—J. KEEPIE.

HARRIS, J. S., & SUMMERS, W. A. (1945.) A

concentration method for demonstrating micro-filariae in blood.—*Amer. J. trop. Med.* 25. 497-498. 786

Using microfilariae of *Dirofilaria immitis*, the authors described a simple method for the rapid routine examination of a large number of samples, for demonstrating small numbers of microfilariae in blood. 4 ml. venous blood are drawn and ejected into a tube containing 0.01 ml. heparin solution and to this are added 4 ml. 2% saponin in distilled water, the contents of the tube being gently mixed until haemolysis is complete. 6 ml. of the mixture are then placed in a clean Shevky-Stafford centrifuge tube and centrifuged at 2,000 r.p.m. for 10 min. The supernatant fluid is drawn off down to the 0.1 ml. mark on the tube and the remaining fluid, after being mixed, is withdrawn and spread on a glass slide which is rapidly scanned under the low power of the microscope. The microfilariae, usually motile, are easily visible and their motility can be preserved for 4-24 hours at room temperature by using a vaselined coverslip to prevent evaporation. Staining is usually unnecessary but, after thorough drying, the smear may be stained with double strength Giemsa stain. Similar results were obtained whether the blood was diluted with $\frac{1}{2}$, 1 or $1\frac{1}{2}$ vols. water. Compared with other concentration methods, recoveries of larvae generally ranged from 90-105% of the theoretical concentration and it is claimed as sufficiently quantitative for use in estimating microfilariae present in blood in very small numbers.—J. N. OLDHAM.

CHITTY, D., & SHORTEN, M. (1946.) Techniques for the study of the Norway rat.—*J. Mammal.* 27. 63-78. [Abst. in *Bull. Hyg., Lond.* 21. 446. (1946), copied *verbatim*. Signed: R. B. FREEMAN.] 787

Satisfactory baiting methods for poisoning brown rats can be worked out only from a study of the feeding behaviour of animals in the wild. The construction of a hopper with a recording device, from which the weight of whole wheat consumed in each half-hour can be determined, is described. The records show a predominantly nocturnal habit of well-fed rats even when the environment is quiet. Where food is inadequate rats can often be conditioned to feed rapidly on token baits at any one time, although occasionally this response is only shown at night. Individual rats can be marked with numbers by using a barium sulphide depilatory on their fur; they can then be recognized without recapture. Rats in a colony do not all show the same type of feeding rhythm: in cases where the majority come regularly and feed well at a bait point, others may show indifference to the bait or long absence after a single mouthful. This may account for the

survival of certain rats even in very thorough poison campaigns.

SCOTT, D. B., & WYCKOFF, W. G. (1947.) **Shadowed replicas of ground sections through teeth.**—*Publ. Hlth Rep., Wash.* 62. 422-425. 788

Sections were prepared by grinding and, after polishing, were etched with various acids. Replicas were made on collodion films which were subsequently treated so as to evaporate obliquely on to them a semi-transparent film of metal. Finally, photomicrographs were made of the shadowed replicas.

The main points discussed pertain to the etching process: its advantages, the acids used, their dilutions and the length of time of their application.—L. M. MARKSON.

WHITE, D. G. (1946.) **A hood to protect precision instruments in the tropics.**—*Trop. Agriculture, Trin.* 23. 115. 789

To prevent damage to microscopes in humid climates from corrosion and the development of a glass-etching fungus a hood made of cellulose acetate is described. The hood is economical and takes up less space than a wooden cabinet. It is made air-tight by cementing the edges with acetone. The bottom of the hood is placed in mercury in a circular groove in a wooden base. A dry atmosphere is maintained within the hood by means of calcium chloride in a container beneath a small wooden table which supports the microscope.—M. C.

BRETEY, J., & BROWAEYS, J. (1945.) **Présentation d'un appareil de fabrication de microinstruments. [An apparatus for the making of micro-instruments.]**—*Bull. Soc. Path. exot.* 38. 182-184. 790

The authors describe an apparatus with which can be made most micro-instruments needed for micromanipulation, such as pipette and needles. The temperature to which the glass is heated is thermostatically controlled and may be varied. There is one diagram and an example is described of the instrument in use.—L. M. M.

REINHART, H. L., MADDOCKS, A. B., & REES, L. W. (1946.) **Reliability of ethyl alcohol substitutes in preparing routine hospital bacteriological stains.**—*Stain Tech.* 21. 133-135. [Authors' abst. copied *verbatim*.] 791

Three different bacterial stains were prepared using ethyl, isopropyl and methyl alcohols as solvents for the dry stain. The stains thus prepared were tried against various organisms and their staining qualities noted. Stains prepared with methyl alcohol were comparable, in ease of preparation and staining quality, with those prepared using ethyl alcohol. It was concluded that

stains prepared with methyl alcohol, instead of ethyl, would be entirely satisfactory for routine procedures. This confirms the findings of Conn and Darrow.

WOLMAN, I. J., EVANS, B., & LASKER, S. (1946.) **Apparatus for determination of specific gravity of multiple specimens of urine.**—*Amer. J. clin. Path.* 16. 131-133. 792

Essentially this is a battery of ten urinometer cups mounted along a horizontally placed, hollow, brass cylinder into which urine from the cups can be simultaneously drained, the cylinder having an outlet into a large waste bottle.

To determine the specific gravity of a series of samples, the urinometers are filled, read, then all drained at once by opening the valve. They are then filled again and the next ten specimens read off.—L. M. MARKSON.

WOLMAN, I. J., EVANS, B., & LASKER, S. (1946.) **A rapid system for routine urine analysis.**—*Amer. J. clin. Path.* 16. 162-168. 793

This is no short cut method, but a carefully planned routine so devised as to eliminate waste of time without sacrificing accuracy to expediency.

Every sample is examined for specific gravity, reaction, presence of protein, sugar, and free sulphonamide, and microscopically for the nature of sediment. The system includes tests for bile, bile salts, urobilinogen, urobilin, diacetic acid, indican, etc.—L. M. MARKSON.

BERNHARD, A., & SCHER, Y. (1946.) **A new reagent for the qualitative detection of albumin in urine.**—*Amer. J. clin. Path.* 16. 96. 794

It is stated that a reagent consisting of equal volumes of a 20% aqueous solution of sulphosalicylic acid and methanol used cold is reliable for the detection of albumin in urine.—M. C. L.

SOUBRIE, A. J., & PATALANO, A. (1945.) **Tecnica fotometrica para la dosificación del rojo congo del plasma sanguíneo en el diagnóstico de la amiloidosis. [Congo red test for amyloid disease.]**—*An Cated. Pat. Clin. tuberc.* 7. 143. [Abst. in *Amer. Rev. Tuberc.* 55. No. 6. p. 171 of absts. (1947), copied *verbatim*. Signed: W. Swienty.] 795

A critical review and study of the existing methods of the Congo red test are given. The authors describe an improved technique. All patients in whom the Congo red in the plasma after four minutes was less than 15 mg. per thousand and c.c. were frankly amyloidotic. All those with 20 mg. or more, had no amyloidosis. As the distribution of the dye in the blood-stream is rapid and uniform, the four-minute test is generally sufficient. In liver disease the excretion of Congo red is slow. In nephrosis the excretion is rapid with presence of Congo red in the urine. In non-

amyloidotic nephrosis, the disappearance of the Congo red is almost normal. There is not yet a satisfactory test for the recovery of Congo red in the urine.

ROMIJN, C. (1946.) De klinische haemoglobinebepaling getoetst aan enkele laboratoriummethoden. Eerste mededeeling: De klinische haemoglobinebepaling. [Clinical haemoglobin estimation by various laboratory methods.]—*Tijdschr. Diergeneesk.* 71. 688–697. [Abst. from English summary.] 796

A critical review of haemoglobin estimation by means of the so-called acid haematin method is given. The speed of the reaction varies with the individual patient. Best results were obtained with the Danish Sicca haemoglobinometer: they agreed closely with results obtained in laboratory tests. This haemoglobinometer was preferable to the haematin test in that it used undiluted blood and in that there was no delay in reading results.

NIZET, A. (1941.) Une nouvelle technique pour l'étude des réticulocytes. [A new technique for the study of reticulocytes.]—*Acta biol. belg.* 1. 402–406. 797

Brilliant cresyl blue solution in saline is mixed with blood (no anticoagulant is to be used) in a cup lined with paraffin and stained for 20 minutes in a moist chamber. The mixture is stirred up with a rod coated with paraffin and a film made in the usual way; it is examined by

See also absts. 658 (medium for *Past. tularensis*) 681 (*Tryp. cruzi* cultures).

dark ground illumination. The film will keep dry or, better, mounted in cedar oil. A polychromasia and fluorescence are produced. Differential reticulocyte counts are possible with such preparations.—L. M. MARKSON.

SUTLIĆ, A., & MIKLAUŠIĆ, B. (1945.) O jugularnoj veni psa kao veni za uzimanje krvi i za ubrizgavanje lijekova. [Collection of blood from and injections into the jugular vein in the dog.]—*Vet. Arhiv.* 15. 131–138. [Abst. from French summary.] 798

The authors found that the jugular vein is the most convenient for easy and quick collection of blood from dogs and that it is practicable also for intravenous injection. The veins of the extremities which are mentioned in the literature as being practicable for the purpose of intravenous injection are not suitable for the collection of blood. Instructions are given for the collection of blood and for intravenous injections.—F. E. W.

EBERHARDT, P. (1944.) Rentgenska slika zglobova ekstremiteta kod zdrave svinje. [X-ray photography of the limb joints in swine.]—*Vet. Arhiv.* 14. 287–316. [Abst. from German summary.] 799

Two methods which are satisfactory for obtaining X-ray photographs of all the joints except the hip and shoulder joints are described. The hip and shoulder joints present difficulties and means of overcoming these are discussed.

—K. J. SINCLAIR.

MISCELLANEOUS

LAKTIONOV, A. M. (1944.) Obespechit' kolkhozy osvobodhennykh rayonov zdorovym skotom. [Providing collective farms in liberated areas with healthy cattle.]—*Veterinariya, Moscow.* No. 4. pp. 1–4. 800

L. describes measures to be taken by local veterinary services to implement the Soviet Government's resolution to supply liberated areas with healthy new stock. These include careful initial selection of animals and their immunization, segregation and branding; emphasis is laid on accurate records of case histories of individual animals and of the movement of stock.—E. C.

ANON. (1947.) The unburied body.—*Lancet.* 252. 524. 801

The dead body as a possible source of infection is discussed. An accumulation of unburied bodies sometimes follows a serious outbreak of such diseases as cholera or plague but evidence is produced to suggest that the bodies are much less dangerous as sources of infection after death than

before. This is particularly true in the tropics when putrefactive changes rapidly destroy most pathogenic organisms. An important exception is anthrax in cattle where the dead body is an important source of infection and where proper disposal is very necessary.—M. C.

HAMILL, J. M. (1947.) The International System of Weights and Measures.—*Brit. med. J.* April 5th. 460–461. 802

This is an account of the history of the development of the metric system of weights and measures, starting from the introduction of the standards in France in 1799, after the French Revolution. It is to be noted that the difficulty of measuring exactly the length of the polar quadrant of the earth, one-ten-millionth part of which was used as the unit of length, the metre, was so great that the standard of length became a material one—a defined standard bar of platinum maintained in a particular condition—and not a natural one and was designated the "mètre des archives".

The standard of volume, the litre was the volume of a cube, each of whose sides measured one decimetre. The cubic centimetre was derived from the volume of the litre.

The standard of mass, the kilogram, was the mass of a quantity of pure water occupying the volume of one cubic decimetre at a temperature of maximum density, 4°C., and for convenience a cylindrical piece of platinum conforming to the standard was the unit and named the "kilogramme des archives".

In 1889 the Bureau International des Poids et Mesures reconsidered these standards. The "mètre des archives" was replaced by the "prototype metre" which was made as nearly as possible the same length and consists of an iridium-platinum alloy of a particular shape with the distance shown between two transverse lines. Accurate copies were made and the British copy is No. 16 and is preserved at the National Physical Laboratory, Teddington.

The kilogram was redefined. As masses could be compared with a higher degree of accuracy than volumes could be determined, a material standard was made, a cylinder of iridium-platinum alloy with a mass as nearly as possible equal to the "kilogramme des archives", and named the "prototype kilogram". The British copy is No. 18 and is also kept at Teddington.

In 1902 the litre was redefined as the volume occupied by the mass of one kilogram of water at the temperature of its maximum density, 4°C., and under a pressure of one atmosphere. Since it has been defined on the "prototype kilogram" the litre, like the kilogram, has been divorced from the metric system. It has now no connexion with the metre. The fundamental change in the definition of the litre has the effect of excluding the cubic centimetre from any derivative relation-

ship with the litre. The thousandth part of a litre is now a millilitre and not, as originally, a cubic centimetre. Actually the litre is equal in volume to 1,000.027 c.c. or from other determinations 1,000.028 c.c. The litre and millilitre have been legalized in this country.

The only part of the metric system which remains is the unit of length, the metre; the logical and proper description is the "International System of Weights and Measures".

The French spelling of kilogramme, gramme and milligramme is used by the N.P.L. The British Pharmacopoeia 1932 uses a mixed spelling, viz, kilogram, gramme, and milligram. This is the legal spelling as set out in the Weights and Measures Regulations. The spelling of "gramme" is fortunate because it is less likely than is "gram" to be confused with "grain".—E. M. J.

WILLIS, J. S. (1946.) **The columnized medical chart.**—*Canad. med. Ass. J.* 54. 153-157. 803

This medical chart consists of a simple folder of heavy card, 18½ in. × 11½ in. when open and 11½ in. × 9½ in. when closed. The front of the folder is divided into two sections, one devoted to administrative information and one to history, physical examination and diagnosis. The back of the folder contains space for additional history, etc. The whole of the inside space is divided into columns with appropriate headings for recording temperature, pulse, respirations, laboratory findings, drugs and treatments received, progress notes and doctor's visits, etc. X-ray pathological detailed laboratory reports and operative and anaesthetic notes are submitted on a standardized sheet and are pasted into the folder in the appropriate place. By the use of this chart the doctor is able to obtain a composite picture of the patient's progress and can compare each measurement, treatment or event, with those of previous days. The charts fit a standard filing cabinet.—T. M.

REPORTS

GREAT BRITAIN. (1946.) **Forty-third annual report 1945-1946 of the Imperial Cancer Research Fund.** pp. 41. London: Royal College of Surgeons. [4to.] 804

Work had been carried out on carcinogenesis, hormones, mammary cancer and chemotherapy. The broad conclusions and future lines of research are indicated.

Of comparative veterinary interest is the brief reference to chemotherapy. Colchicine has been shown to be a mitotic poison and investigations were made into its action upon mammary carcinomata and other neoplasms in mice. In these cases, complete regression of the tumour was exceptional.

Experiments were also carried out to deter-

mine the action of stilboestrol on mammary carcinoma, squamous cell carcinoma and other tumours in mice. It was concluded that "upon the tumours employed in this investigation stilboestrol had no specific growth inhibitory action and that such inhibition of growth as occurred with relatively high dosages was the result of a non-specific action."—A. R. JENNINGS.

SIMPSON, B. S. (1946.) **Tuberculosis in Sutherland. With special reference to surgical tuberculosis.**—*Edinb. med. J.* 53. 508-519. 805

The sparse population of Sutherland is about 15,000, mainly confined to the eastern seaboard. The standard of cattle housing and living conditions of the crofters is low. Non-pulmonary

TUBERCULOSIS appears to be very common. The milk supply is unsatisfactory; there are only three attested herds comprising about 150 animals in the entire county, and only one of these is licensed for the production of tuberculin-tested milk. The other registered dairies comprise about 300 cows while there are about 400 cows in exempted premises. The veterinary inspection of the registered herds is quite inadequate, while there is no inspection at all of the cattle in exempted premises. Despite the efforts of the Department of Agriculture for Scotland for the improvement of the cattle, only the beef herds have benefited by the provision of bulls.

Milk and butter are badly stored. Improvements are difficult to bring about as there is great apathy amongst the population and often even active obstruction. Especially in the fishing villages there is much intermarrying, which probably weakens the stamina of the people. Rates are high and 1d. in the pound rate brings in only about £200.

Research in Sutherland shows that much of the pulmonary TUBERCULOSIS is due to bovine type organisms.—D. S. RABAGLIATI.

ANON. (1945.) **Central tuberculosis scheme for Northern Ireland.**—*Brit. med. J.* Sept. 15th. 368. 806

There appears to be no adequate scheme in Northern Ireland to deal with the tuberculosis problem. The Northern Ireland Council of the B.M.A. has published a report calling for better facilities for prevention, diagnosis and treatment. The proposals call for more sanatoria and for complete pasteurization of all milk samples. At present 40% of all cattle killed in the abattoirs show naked eye lesions of TB., and about 6% of all milk samples of unheated milk are said to be infected. Certain proposals are also made for research, eradication and after-care.

The state of affairs in Northern Ireland compares very unfavourably with counties like the West Riding of Yorkshire and Lancashire and also with Wales where there are unified schemes. In Northern Ireland the death rate from TB. is 840 per million compared with 560 for Lancashire and 570 for the West Riding.—D. S. RABAGLIATI.

NORTHERN RHODESIA. (1947.) **Veterinary Department. Annual report for the year 1945.** [HOBDAI, J.] pp. 14. Lusaka: Govt. Printer. 1s. 807

The livestock industry of Northern Rhodesia has usually failed to meet the demands of the territory and the department has endeavoured to increase the livestock population and to minimize importation.

In 1945 the general health of the stock was satisfactory, although in certain parts of the country sharp frosts reduced the value of the grazing. An outbreak of pseudo-urticaria or LUMPY SKIN DISEASE caused some loss, more in imported animals than amongst the indigenous native herds.

Improvement in animal husbandry amongst native herds was slow owing to the lack of trained assistants and to the natural conservatism of the natives. The African veterinary assistants' scheme for training completed the first two years of its course and the first batch of students, 19 in all, graduated and were all posted.

The country remained free from CONTAGIOUS PLEURO-PNEUMONIA and F. & M. DISEASE for the whole year. There were outbreaks of TRYPANOSOMIASIS, ANAPLASMOSIS and PIROPLASMOSIS. Experiments were carried out on dips and dipping. Routine diagnosis and a certain amount of research of the tick problem continues.

A total of 40,000 head of cattle were slaughtered in the territory for human consumption, an increase of 8,000 over the figures for the previous year. Of these, 10,000 only were imported animals and of the remaining 30,000, 8,000 were supplied by Europeans and 22,000 by native stock owners. The average dressed weight of Barotse cattle were, for oxen 372 lb., cows, 302 lb., and for bulls, 360 lb. A number of statistical tables are included.—D. S. RABAGLIATI.

SOUTHERN RHODESIA. (1947.) **Report of the chief veterinary surgeon for the years 1941, 1942, 1943, 1944 & 1945.** [KING, B. L., & HUSTON, P. D.] 35 pp. Salisbury: Rhodesian Printing & Publishing Co., Ltd. 808

1941.—One veterinary surgeon, 15 cattle inspectors and three members of the clerical staff were all released for military duties. Twenty-seven deaths out of a total of 191 cattle in the Umtale district were caused by THEILERIASIS, the origin of which was not traced as the last outbreak in this area occurred in 1926. The disease was controlled by the delayed slaughter policy.

TUBERCULOSIS occurred in the Bulawayo district, of the 87 cattle tested there were 26 positive reactors to the tuberculin test. A total of 1,192 head of cattle were tested on importation into the colony with only six reactors. Tables include the number of cattle imported and exported, and statistics on meat inspection and on EAST COAST FEVER.

1942.—ANTHRAX, HEARTWATER, QUARTER ILL, THEILERIASIS, TB., HELMINTHIASIS, SHEEP SCAB and TRYPANOSOMIASIS are mentioned. Tables similar to those for 1941 are given.

1943.—An outbreak of F. & M. DISEASE

originated in the Fort Victoria district. No outbreak had occurred for six years with the exception of a single one which was easily controlled. Intramuscular injections were satisfactorily substituted for the submucosal method previously used.

1944.—The control of F. & M. DISEASE at the beginning of the year was satisfactory and inoculations of the last four infected centres in the Salisbury district had been completed. The disease re-appeared and was controlled at seven centres in the Salisbury district and in the Victoria district at the end of January.

A plea is made for a survey of TUBERCULOSIS and CONTAGIOUS ABORTION, especially in the country districts, so that they could be dealt with before they became as widespread as they are in Great Britain.

1945.—The late rains of 1944 lowered the condition of the cattle stock generally, however, this improved during the year despite some heavy and early frosts. THEILERIASIS was recorded. It is suggested that the 4–7 months compulsory dipping period which ceases on June 1st, should be extended until the end of July.

F. & M. DISEASE occurred in the Bikita reserves, but owing to the advanced lesions diagnosis could not at first be confirmed, later cases had also very indefinite symptoms, probably due to the immunity conferred on the cattle by the 1943 outbreak.

LUMPY SKIN DISEASE was diagnosed for the first time in the colony and spread considerably to isolated stations 30–40 miles apart, leaving the intermediate area free from infection. The imposition of restrictions were thus made more difficult. Therapy was not successful.—

—D. S. RABAGLIATI.

SOUTHERN RHODESIA. (1947.) **Report of the chief veterinary surgeon for the year 1946.** [HUSTON, P. D.] pp. 9. Salisbury: Rhodesian Printing & Publishing Co., Ltd. 809

The report lays great stress on the difficulties encountered from shortage of veterinary staff, which consists of only 12 veterinarians and 62 animal health inspectors; quite inadequate for the duties involved.

Ticks appear to be on the increase and reports indicated that in some cases arsenical dips were failing to clean the cattle and that EAST COAST FEVER caused some loss. Owing to weather conditions the intervals between the dippings had to be extended and this produced further deterioration. Where cattle were in poor condition reports of "scalding" of the cattle by the dip were received.

Amongst other diseases which existed were ANTHRAX, ANAPLASMOSIS, PIROPLASMOSIS, THEILERIASIS, QUARTER ILL, HEARTWATER, TUBERCU-

LOSIS, CONTAGIOUS ABORTION, MASTITIS, EPI-VAGINITIS and sterility as well as parasitism, FOOT AND MOUTH DISEASE and outbreaks of POISONING. There were widespread cases of LUMPY SKIN DISEASE. Two types occurred, one of a mild type in Matabeland, Gwelo and Fort Victoria and a severe type in Salisbury, Mazoe and Lomagundi. The area of the territory east of Marandellas remained free from infection.

The cause of EPI-VAGINITIS and sterility is yet unknown, it is stated that these conditions were only diagnosed in the colony as late as 1944.

BRUCELLOSIS in man from cattle also made its appearance. The use of strain 19 vaccine for heifers gives ground for hope of its elimination but it is pointed out that the vaccine is difficult to obtain and it is hoped that facilities may be provided for its production in the colony. A total of 135,000 cattle were killed in abattoirs during the year, 19,759 sheep and goats and 40,954 pigs.

The Colony has 8,878 dipping tanks available for cattle and 2,957,075 cattle were dipped, nearly two-thirds of which were owned by the native population.—D. S. RABAGLIATI.

SOUTHERN RHODESIA. (1947.) **Report of the Director of Veterinary Research for the years 1942, 1943, 1944 & 1945.** [LAWRENCE, D. A.] pp. 24. Salisbury: Rhodesian Printing & Publishing Co., Ltd. 810

This report incorporates the work for the years 1942–1945, inclusive. The importance of examining films of blood and tissue smears for the early diagnosis of disease is emphasized, but co-operation with the farmers was difficult. Large numbers of serological tests for BOVINE CONTAGIOUS ABORTION, SALMONELLA PULLORUM INFECTION in fowls and for FOWL TYPHOID were carried out and large quantities of vaccines were distributed amongst stock owners. The vaccines were prepared against BLACKLEG, HORSE-SICKNESS, FOWL POX, CALF PARATYPHOID and recently CONTAGIOUS ABORTION. It has not been possible so far to arrange for the local manufacture of strain 19 but it is hoped to do so at some future date.

Equine pregnancy diagnosis was practised on a large scale and it was found that the Cuboni chemical test was more accurate under the conditions prevailing than the Morcos test, a modification of the Aschheim-Zondek test.

An outbreak of F. & M. DISEASE occurred in Salisbury (1944), the history and course of which are described at some length. Control originally consisted of intra-nasal inoculation with blood from reactors, this being succeeded by the intramucosal inoculation, which in turn gave place to the intra-muscular method which is now in use. THEILERIASIS and also STERILITY in bulls due to

a bilateral chronic indurative epididymitis with atrophy of the testicular substance was investigated.

In 1945 experiments were carried out on TRYPANOSOMIASIS control and treatment, on THEILERIASIS, LUMPY SKIN DISEASE. D.D.T. and thanisol were tried experimentally for the prevention of ticks and it is hoped shortly to have a dip on the market combining the benefits of both drugs.—D. S. RABAGLIATI.

SUDAN. (1944.) Annual report of the Sudan Veterinary Service for the year 1944. [GLANVILLE, W. H.].—*Rep. Sudan vet. Serv.* 1944. pp. 1-22. **811**

RINDERPEST was widespread but of low virulence, the mortality rate being only 1.3% against 1.7% for the previous year. 80,394 head of cattle were serumized and 13,138 head vaccinated against this disease. CONTAGIOUS PLEURO-PNEUMONIA affected 13,766 cattle of which 384 died or were slaughtered.

FOOT AND MOUTH DISEASE appeared in the Khartoum and Wadi Halfa quarantines thus delaying the export of cattle. Routine artificial infection of all cattle destined for export to Egypt was carried out and in consequence there was no further outbreak. One outbreak occurred in a high grade Friesian milking herd reducing the milk by 40%.

The first case of MILK FEVER recorded in the Sudan was diagnosed and successfully treated.

A great demand existed for antypol for the treatment of TRYPANOSOMIASIS in camels, no less than 31,942 doses being issued. RABIES was diagnosed in 39 dogs, five donkeys and one camel.

The report records the trade in livestock and livestock products; cattle exports for instance decreased from 40,517 in 1943 to 36,611 in 1944. Great attention is given to the general improvement of the livestock and despite difficulties the Khartoum veterinary school was continued. The financial statement shows that the veterinary service brought in a revenue of £38,658 while its expenditure was only £44,581.

The research officer records an excellent year's work in routine diagnosis and in the manufacture and issue of sera and vaccines. No special research work could be attempted owing to the increase in routine diagnosis, lack of staff and inadequate space.—D. S. RABAGLIATI.

SWAZILAND. (1945.) Livestock and agricultural department. Annual report for the year 1945.

[FAULKNER, D.] pp. 24. [Mimeographed.] Items of veterinary interest, pp. 16-20. **812**

Throughout the year a cordon from Abercorn Drift in the east to Hwanca in the North West, an area of 200 square miles, has been constantly

patrolled to prevent the introduction of F. & M. DISEASE from the Union, as the Union has not accepted a slaughter policy. There is no information about the position of F. & M. DISEASE in Portuguese territory, so a constant watch must be kept on the frontier.

The control of PLEURO-PNEUMONIA has been successful. ANTHRAX, QUARTER ILL, ANAPLASMOSIS and PIROPLASMOSIS occurred. Drought conditions resulted in an impoverishment of the stock and cattle.

HEARTWATER causes severe economic loss and prevents ranchers from importing pedigree stock, but a new method of immunization has nearly destroyed its terrors.

During the year the Onderstepoort laboratory ceased to produce a preventive vaccine against PIROPLASMOSIS and the vaccine against ANAPLASMOSIS was delayed owing to the appearance of LUMPY SKIN DISEASE in the cattle used for their manufacture. This disease is a new condition which is being carefully watched. Over 72,580 smears were examined, an increase over the previous year's figures of over 8,000.

A loss of 6,674 head of stock was chiefly attributable to the drought, and also to a lower rate of calving. Cattle sales were affected, 7,500 cattle were sold at an average price of £7 15s. 6d. Tables are appended to the report showing the distribution of diseases, classification of smears examined, etc.—D. S. RABAGLIATI.

SWAZILAND. (1946.) Livestock and Agricultural Department. Annual report for the year 1946.

[FAULKNER, D. E.] pp. 45. 6 Appendices. [Mimeographed.] Items of veterinary interest pp. 8-11; 15-23. **813**

The most serious event of the year was the return of *Glossina* to Swaziland with the resultant spread of NAGANA to cattle, due to the dispersal of two game reserves in North Zululand. An active campaign against this spread involved expenditure of £33,000 and the appointment of another veterinary surgeon.

LUMPY SKIN DISEASE has spread throughout the territory; the incidence among the native cattle was lower than among European owned cattle.

It is still necessary to keep up an active patrol against F. & M. DISEASE between the Eastern Transvaal and the Portuguese East African Border. A new double fence will soon be erected which will greatly cheapen the cost of patrolling the district.

In regard to dairying, the butter fat content for the year dropped to the lowest point ever recorded, which it is thought was due to a succession of unfavourable years.

Dipping against EAST COAST FEVER was con-

tinued and gammexane was tried with very hopeful results.

Amongst other diseases mentioned as occurring were ANTHRAX, QUARTER EVIL, ANAPLASMOSIS and PIROPLASMOSIS, HEARTWATER, sheep and goat SCAB and parasitism. It is said that up to 10% of the cattle are affected with MEASLES. The report describes the livestock industry, the sales, importations, exportations and the annual trek of Merino sheep which is diminishing.—D. S. RABAGLIATI.

AUSTRALIA. (1946.) Tenth annual report of the Australian Wool Board for year 1945-46. pp. 15. Items of veterinary interest pp. 8-14. Melbourne: Stockland Press. 814

For the control of BLOWFLY STRIKE, application of the Mules Operation at lamb marking time was not so efficient as at a later age. Dressings containing boric acid, bentonite and citronella as a repellent were effective in preventing fly strike in newly docked lambs. A D.D.T. emulsion was not effective.

Hexachlorocyclohexane ("666," "gammexane") emulsions at dilutions of 1:3,000-1:6,000 killed all keds. Keds emerged from pupae and survived on the sheep put through the dipping bath, towards the end of each series, showing that there had been a decrease in concentration as sheep passed through the bath. A 1:2,000 emulsion was effective against body lice. Rotenone, applied as 8 oz. timbo root per 100 gallons of water (= 1:40,000 rotenone) was effective against adult keds, but there was no residual action against keds hatching from pupae. Arsenic was readily absorbed through the skin of sheep as they passed through the dipping bath. Relatively large amounts were found in the rumen although none of the dipping fluid was swallowed. The life-cycle of the body louse (*Bovicola ovis*) on the sheep approximates that observed when lice are kept under artificial conditions in the laboratory at 36.5°C., and 50-70% relative humidity.

Calcium fluoride had erratic anthelmintic effects against *Haemonchus contortus*. Nicotine bentonite did not show anthelmintic efficiency when swallowed into the rumen. A large-scale trial of the efficiency of phenothiazine against *Trichostrongylus* spp. was carried out. Doses ranging from 10-50 g. were used, and efficiency increased with increasing doses. Even at 50 g. a good many worms remained in treated sheep.

Administration of phenothiazine in salt lick did not effectively control helminth parasites

In sheep artificially infested with *Oesophagostomum columbianum* appetite decreased by 50% within three weeks, and body weight decreased by 20-30%. Although maintained on an adequate diet infested sheep took 7-11 months to regain their pre-infestation body weights.

Winter feeding trials with weaners in the New England region were mentioned. Sheep grazed continuously on an oat crop from May to September and gained 17.5 lb. per head, cut 4 lb. 11 oz. wool, were valued after shearing at 12s. 6d., and there were no deaths among 45 sheep. Similar sheep grazed on natural pastures lost 1.8 lb., cut 3 lb. 7 oz. wool, were value at seven shillings, and suffered 10 deaths (22%). Sheep grazed on an oat crop for three days per week, with access to natural pastures for four days per week gained 7.8 lb. per head, cut 4 lb. 2 oz. wool, were valued at nine shillings and suffered no deaths.

The sheep grazed continuously on the oat crop were running at seven per acre and although they acquired heavy infestations with *H. contortus* there did not appear to be any adverse effects. These sheep threw off their infestations with *O. columbianum* soon after they were placed on the oat crop, an effect not seen in any of the other sheep in the trial.

Observations on the occurrence of "self-cure" are mentioned. Moving sheep between areas of different soil and pasture types, and to and from a crop of oats did not influence "self-cure". Whatever may be the cause of the phenomenon, the "cure" is of short duration and re-infestation occurs.

A summary of information on TOXAEMIC JAUNDICE gained by observations over a number of years is presented.

Breeding investigations include inheritance of skin wrinkles, inbred flocks of Merino sheep, polledness in Merino sheep, hollow back, hairiness or fluffy-tip of wool, fertility in rams and reproductive disturbances seen in sheep grazing pastures in which the dominant plants are certain strains of subterranean clover.

Nutritional investigations include mineral metabolism, drought feeding in the field, vitamin A requirements of sheep, and copper deficiency and wool production.

Progeny testing is discussed and an outline of the methods and limitations is given. A number of pasture trials, including grazing management, are briefly discussed.—H. McL. GORDON.

SOUTH AUSTRALIA. (1946.) Eighth annual report of the Council of the Institute of Medical and Veterinary Science, July, 1945-June, 1946. pp. 8. Adelaide: Institute of Medical and Veterinary Science. 815

Studies were continued on antibacterial substances produced by fungi and flowering plants; the typing of *Salmonellae* from Australia and New Guinea; on *Actinomycetes* and *Pseudomonas*. Group B streptococci and haemolytic staphylococci were isolated from milk of cows with MASTITIS. Instillation of penicillin into the udder

in the acute stage of streptococcal mastitis effected a cure. The avirulent variants and some saprophytic members of the *Mycobacterium* group were investigated with the aim of preparing vaccines for human use.

Further data were collected on the association of RUBELLA (GERMAN MEASLES) and congenital malformations. Biochemical studies were carried out on CYSTINURIA. The histamine content of the blood in leucaemia conditions was investigated. "STAGGERS" of sheep due to ingestion of *Phalaris tuberosa* was shown to be prevented by top dressing pastures with a complex mineral mixture containing manganese, zinc, boron, copper, cobalt and molybdenum. Zinc may be the significant element. The following were also studied:—ERGOTISM in cattle; eye deformities in pigs; age and histamine shock; anticoagulant from perfused organs; influence of anaesthetics in causing liberation of deaminating enzyme into the blood stream.

Publications by the staff of the Institute are listed, also details of personnel, expenditure, etc.
—H. McL. GORDON.

JAMAICA. (1947.) **Annual report of the Department of Agriculture, for the year ended 31st March 1946.** pp. 16. Items of Veterinary interest pp. 12–14. Kingston: Govt. Printers. 816

There was no government veterinarian in the Colony during three months of the year. Two new appointments were made.

Owing to the incidence of CONTAGIOUS ABORTION the scheme for loaning the 19 bulls imported in 1944 was delayed. It was finally decided to distribute bulls to herds with less than 5% reactors. Two of the bulls died before being sent out on loan. Three bulls suffered from ANAPLASMOSIS. Several bulls were returned as being unfertile. Many of the bulls still used are too old for the work at livestock improvement centres.

ANAPLASMOSIS has been the main cause of sickness and deaths on the government stock farms. About 40% of these herds have been vaccinated as calves with contagious abortion Strain 19 vaccine.

6,325 animals were vaccinated against ANTHRAX, BLACKLEG, CONTAGIOUS ABORTION or SWINE FEVER. No outbreaks of anthrax were diagnosed. BLACKLEG was confirmed in three outbreaks. 455 animals were vaccinated.

7,899 animals were tested for BOVINE CONTAGIOUS ABORTION, 9.66% reacted. A calfhood vaccination scheme has been started. 1,100 calves have been treated with Strain 19 vaccine.

Nineteen cases of PIROPLASMOSIS were successfully treated with pyriphen. More cases of

ANAPLASMOSIS are being reported. Results of treatment have not been satisfactory. SWINE FEVER was controlled by the use of crystal violet vaccine. HELMINTH infections are being controlled by the use of phenothiazine. Inadequate dipping facilities due to faults in the upkeep of dips and overstocking on dairy farms tend to defeat the measures for the control of tick-borne diseases. Artificial insemination is being carried on experimentally at the government stock farm and in herds in that vicinity. There were 111 animals imported and 23 exported. Veterinary services were rendered to the government stock farms and other government departments.—J. A. G.

LEEWARD ISLANDS. (1945.) **Annual report of the Department of Agriculture, for 1945.** [HUTSON, L. R.]—*Rep. Dep. Agric. Leeward Is., 1945.* pp. 1–21. Items of veterinary interest pp. 5; 13; 15; 16; 19–21. 817

There is an inadequate supply of livestock produce, particularly fresh eggs and milk. A few animals were exported (value £19,866). There were no serious outbreaks of infectious disease.

At the central experimental station livestock developments are anticipated in view of the recommendations of a recent Royal Commission. The facilities are restricted—there are only one bull and 21 cows and heifers, a light draught stallion of the French Canadian breed and three native mares. Fodder and water is always scarce and this is a great restricting factor in any scheme of livestock development. There has been a recent importation of a Holstein Friesian bull from Canada to grade up local cattle. An English thoroughbred stallion served 22 local mares. Canadian Berkshire and American Duroc Jerseys are being tried. The poultry unit was augmented by 100 Rhode Island Red chicks.

A panel veterinary system was inaugurated for St. Kitts but it is too early to report on results.

In tests carried out on BOVINE TUBERCULOSIS the numbers of reactors were in Antigua 10.3%, St. Kitts-Nevis 5.5% and Montserrat 3%. This disease is the main cause of carcass condemnations in the abattoirs of Antigua and St. Kitts-Nevis. Eradication measures are proposed.

Nineteen cases of ENZOOTIC EQUINE COLIC occurred in St. Kitts with seven deaths (36.84%). A report has been submitted to the Secretary of State, Colonial Office. The causes appear to be due to faulty methods of animal husbandry.

Helmint infestations are still very prevalent. In regard to external parasites, particularly ticks, the provision of facilities for regular dipping and their use by livestock owners is expected to cause further improvement in the general condition of livestock.

A modified dipping programme continues in

the Virgin Islands, an area which is still accredited free from cattle fever tick.

Other infectious diseases mentioned are BOVINE PIROPLASMOSIS, ANAPLASMOSIS and COCCIDIOSIS; in goats COCCIDIOSIS; LEPTOSPIROSIS in dogs; and in poultry LEUCOSIS, FOWL POX, FOWL TYPHOID and COCCIDIOSIS.—J. A. GRIFFITHS.

I. SWEDEN. (1943.) *Det civila veterinärväsendet år 1942. [Report of the Civil Veterinary Service for 1942.]* pp. 55. Stockholm: Kungl. Boktryckeriet. 818

II. SWEDEN. (1945.) *Det civila veterinärväsendet år 1943. [Report of the Civil Veterinary Service for 1943.]* [ALEGREN, A.] pp. 105. *Ibid.* 819

I. The number of veterinarians in Sweden in 1942 was 625. An analysis of their exact functions is given: 350 were in government services, mostly as district veterinarians and only 109 were in whole-time private practice.

Sweden became free from F. & M. DISEASE in May after having been infected for several years. ANTHRAX appeared in 24 farms in 1942, BLACKLEG in five, FOWL TYPHOID in nine and EQUINE INFECTIOUS ANAEMIA was diagnosed in 128 horses. Detailed statistics relating to the campaign against BOVINE TB. are given, 9.7% of 122,882 cattle tuberculin tested for the first time reacted; and 1.1% of 690,000 on retest. Figures are now given for 177,400 cattle dealt with under Ostertag control principles and figures relating to sputum, milk and vaginal secretion examinations are given. 180 cows were slaughtered on account of TUBERCULOUS MASTITIS and 306 for TUBERCULOUS METRITIS whilst the figure for PULMONARY TB. was 6,626. Very little was done in state control of BOVINE BRUCELLOSIS.

The bulk of the report consists of tables showing the activities of the district veterinarians and the diseases observed. Meat and milk inspection figures are given. News about numerous diseases in particular localities is copied from reports of provincial and district veterinarians: deficiency diseases of known and unknown nature figure largely in these. Numerical data relating to the work of the state veterinary bacteriological institute also appear.

II. In 1943 there were 635 veterinarians in Sweden. This year's report contains a table showing the number each year from 1885 onwards.

No new case of F. & M. DISEASE was observed during the year. Vaccination was however carried out in a number of more vulnerable herds as a precautionary measure. ANTHRAX caused 22 deaths and BLACKLEG six. SWINE FEVER reappeared after a lapse of three years, in Nalmokus province and to a very limited extent in several other provinces, 428 cases in all being diagnosed. A very careful study of the route of infection into

the country was made and it was considered that it had entered most likely through the medium of pork imported from Argentina. A detailed account of this investigation and of one carried out in connexion with the spread of the disease within Sweden is given.

GLANDERS entered Sweden over the Finland frontier in 1943 and necessitated a careful serological survey of the horse population in Norrbotten province but only two of 1,760 tested animals reacted.

The administrative measures which were taken are described in detail.

Thirty-one cases of EQUINE INFECTIOUS ANAEMIA were diagnosed and 30,000 kroner were paid in compensation for their slaughter. The chief control measures are the avoidance of use of communal pasture by horses and a campaign against blood-sucking insects which are believed to act as vectors.

In the campaign against BOVINE TB. 138,600 cattle were tuberculin-tested for the first time and 9.8% reacted. Only 0.8% of 726,500 retested cattle reacted. 171,000 cattle were subjected to bacteriological examination. 30% of sputum samples from 6,228 animals were positive, also 3% of 3,935 milk samples and 8.3% of vaginal secretion samples. 142 cows were slaughtered for TUBERCULOUS MASTITIS and 344 for TUBERCULOUS METRITIS.

Considerable information on the disease situation in the various provinces is given, both descriptively and tabularly.

The usual returns for milk and meat are given.—J. E.

U.S.A. (1946.) Department of Agriculture, Agricultural Research Administration. *Report of the Chief of the Bureau of Animal Industry, 1946.* [SIMMS, B. T.] pp. 66. Washington: The Superintendent of Documents, U.S. Govt. Printing Off. 8vo. 10 cents. 820

Efforts are being made to produce normal breeding reactions in ewes at any season of the year by the use of oestrogens, although results are not yet conclusive. Soya beans have proved to be dependable as a temporary sheep pasture at periods when permanent blue-grass pastures are scarce.

NEWCASTLE DISEASE is being investigated in about half the states however, mortality is less than that reported in other countries.

Pigs farrowed by serum-virus treated sows have a considerable degree of immunity against SWINE FEVER during the suckling period and do not respond to crystal violet vaccine. Piglets farrowed by crystal violet treated sows are susceptible to swine fever during their third week of life and after, and such piglets develop a con-

siderable degree of immunity if treated with crystal violet when four weeks of age or over. Pigs treated with crystal violet vaccines retain their immunity longer than the accepted period of eight months, up to at least nine months—the longest period yet tested.

RABIES still remains a serious problem, of the 9,963 cases reported during the year, 8,505 were in dogs, 487 in cattle, 46 in horses, 11 in sheep, 30 in pigs, 466 in cats, 10 in goats, 373 in miscellaneous animals and 35 in human beings.

Vaccination of suspicious or positive bovine brucellosis reacting cattle had no appreciable effect on the normal course of the established disease. Strain 19 may be expected to provide a high degree of resistance for five or six years following vaccination during calthood.

Tuberculin is known to lose potency with age, experiments show that potency may be increased by heating it for 75 minutes with low concentrations of formaldehyde under reflux condensers or by collecting the tuberculin fraction retained by colloidion filters.

Good management plays a very great part in the prevention of mastitis, special emphasis being laid on the prevention of injury to the teats. Rough hand milking or improper management of the milking machines will cause irritation of the lining of the teats leading to later infection.

—D. S. RABAGLIATI.

FLÜCKIGER, G. (1947.) *Délibérations du Sous-comité pour la santé animale de la FAO lors de sa réunion à Washington du 31 mars au 4 avril 1947. [Recommendations of the F.A.O. sub-committee for animal health at the reunion in Washington from March 31st to April 4th, 1947.]—Schweiz. Arch. Tierheilk. 89. 314-231. [In French.]* 821

The veterinary committee convened by F.A.O. in August, 1946, in London made certain recommendations which were approved by the meeting of F.A.O. held at Copenhagen in September, 1946. One resolution advised the establishment of a permanent veterinary committee of F.A.O. This recommendation has been accepted in a modified form and a sub-committee of animal health under the permanent consultative committee of agriculture was convened by the Director General of F.A.O. and met at Washington from March 31st to April 4th, 1947.

This committee, composed of veterinary authorities from eight countries, studied veterinary problems of world-wide importance and how

F.A.O. could encourage the greatest possible international collaboration in dealing with them. It was recommended that F.A.O. should encourage and co-ordinate national and international efforts rather than assume responsibility for such action.

It was recommended that F.A.O. should co-operate in the distribution, study and preparation of avianized rinderpest vaccine especially for use in such countries as Egypt, Kenya and Siam. The possible establishment of an international institute for the study of rinderpest was discussed.

It was recommended that F.A.O. should collate the literature dealing with vaccines and other remedies with the object of collaborating with the Office International des Epizooties in testing such agents under varying conditions. It was felt that F.A.O. should help in making known the results of such tests as quickly as possible and also in disseminating information regarding nutrition of livestock and genetical resistance to disease.

An international congress of experts under the patronage of F.A.O. was recommended to be held in 1948 to discuss the acclimatization of livestock especially in the tropics and sub-tropics.

The shortage of trained veterinary research officers in many countries is aggravated by the shortage of accommodation in veterinary colleges in the U.S.A., Gt. Britain, Australia and South Africa. This pressure, which is likely to exist for some years, makes it difficult for the colleges to accept for training students from other less-developed areas.

The necessity for collecting statistics of losses caused by disease of livestock was recognized.

The rules and regulations governing international movements of livestock and livestock products require study with the object of making arrangements for the establishment of quarantine stations to facilitate movement of high quality breeding stock.—M. C.

ANON. (1947.) *Public Health Service disease outbreak reports, 1945.—J. Milk Food Technol. 10. 125-128.* 822

Most of the disease outbreaks due to faulty handling of food were types of GASTRO-ENTERITIS. Four outbreaks of TRICHINOSIS, totalling 87 cases, occurred. One outbreak of 300 cases due to staphylococcal udder infection occurred, the milk in question having been kept 12 hours unrefrigerated before pasteurization. Fourteen cases of infectious HEPATITIS were attributed to raw milk.

—R. MACGREGOR.

BOOK REVIEWS

CURASSON, G. [Inspecteur Générale des Services Vétérinaire des Colonies]. (1946.) *Maladies*

infectieuses des animaux domestiques. Tome premier. Tome second. [Infectious diseases

of domestic animals. Volume I. Volume II.] pp. 418 & 480. Paris: Vigot Frères. 8vo. 823

In 1936 the author published his "Traité de Pathologie Exotique et Comparée" and this was well received. He has now written a book dealing with a more comprehensive range of conditions, but in a rather more concise form.

The book is in two volumes. The contents of the first volume are grouped under "Plagues":—(rinderpest, swine fever, African horse sickness, fowl plague and Newcastle disease); Epitheliotropic Virus Diseases:—(dog distemper, "cat distemper," "gastro-enteritis of cats," panleucopenia of cats, bluetongue, "Nairobi sheep disease," avian laryngotracheitis, infectious bronchitis of chickens, pneumoencephalitis of chickens); Dermotropic Virus Diseases:—(pox diseases, foot and mouth disease, vesicular enanthema of swine, papular stomatitis of cattle, contagious ecthyma of sheep and goats, papillomatosis); Neurotropic Virus Diseases:—(rabies, Aujeszky's disease, equine meningoencephalomyelitis, Borna disease, bovine and ovine enzootic encephalomyelitis, porcine encephalomyelitis, swineherd's disease, louping ill, scrapie); Mesenchymotropic Virus Diseases:—(equine infectious anaemia, ovine and caprine infectious anaemia, canine infectious anaemia); Septicaemias:—(swine influenza, Rift Valley fever, equine typhoid, ["pink-eye,"] equine infectious bronchitis, bovine infectious bronchitis); Visible and Cultivable Filtrable Viruses, Rickettsioses and Diseases of Unknown Origin:—(equine infectious pneumonia, bovine three day fever).

The second volume deals with bacterial and fungous diseases.

This book will be widely appreciated, but it suffers from the fact that, as might be expected in the circumstances, the literature of the immediate past and war period is not covered. Consequently the results of a great deal of important work are not included. It is to be hoped that a new edition will appear before long with these defects remedied. References are by name and date only and many readers will not be able to amplify their knowledge from the information given unless they have access to a well arranged and complete library.

The printing is clear, but the paper is not of high quality. The volumes are in paper covers.

CURASSON, G. [Inspecteur Générale des Services Vétérinaire des Colonies]. (1947.) *Le chameau et ses maladies. [The camel and its diseases.]* pp. 462. 83 figs. Paris: Vigot Frères. 8vo. 824

The author has written a most useful book. In dealing with the progress of knowledge on the maladies of the camel he has written somewhat

discursively but none the less entertainingly, including a certain amount of anecdote relating to ignorance about the health requirements of the camel. At the present time it is not known whether the camel is susceptible to either cattle plague or F. & M. disease.

The author has attempted to record all the available facts he could gather and the result is a full and most comprehensive book on the camel and its diseases.

The book commences with a historical and geographical account of the camel, stressing the difference, so often misunderstood, between *Camelus bactrianus*, the bactrian camel with two humps, and *Camelus dromedarius* the dromedary, the one-humped camel. This is followed by a most interesting chapter on the camel and the desert describing much of the old camel lore. The study of the infectious diseases is, for descriptive purposes, divided into two groups, those due to the ultra-visible viruses and those of bacterial origin, including such conditions as influenza, rheumatism and other diseases about which but little is known.

Two chapters are allotted to protozoan diseases, one to the spirochaeta, flagellata and allied organisms, while the other and chief one deals with trypanosomiasis and owing to the great importance of this disease in the camel, is one of the longest and fullest chapters in the book. The various species of trypanosomes are dealt with at length along with their carrier hosts, methods of spread, prevention, diagnosis and treatment. A description of both ecto- and endoparasites of the camel is given. There is a chapter on poisons, both mineral and vegetable, including details of poisonous plants.

The remainder of the work describes the different systems of the body with anatomical notes on their structure under the headings of alimentary, respiratory, nervous, urino-genital systems, etc., along with their non-specific diseases. A considerable part of the book is delegated to surgical anatomy, surgical treatment and methods of anaesthesia; one feels however that this, like the description of the dentition, might be elaborated when another edition is produced.

The volume ends with short notes as an aid to memory on various points important to those dealing with the camel, such as rations, a list of drugs used and a detailed list of the parasitic infestations in tabular form. Finally, there is an index of the contents, given serially, but had the author been able to include an alphabetical index, this would have been of great benefit to the student and others.

As is to be expected in such a work the author quotes liberally from the various writers on the

camel from different countries, the most commonly cited being Leese from his work "A Treatise on the One-humped Camel", which the author describes as the only complete treatise on the camel in any language, the writings of Cross from India and many others. The 83 figures included in the book are well reproduced and lend an added interest to what is a most useful work. It seems unfortunate that the demand for this book is not likely to be large owing to the very limited number of veterinarians and others interested in the camel, for it deserves to be widely read.

—D. S. RABAGLIATI.

STILES, W. [M.A., Sc.D., F.L.S., F.R.S., Mason Professor of Botany in the University of Birmingham]. (1946.) **Trace elements in plants and animals.** pp. xi + 189. 12 plates, 20 tables. Numerous refs. Cambridge: University Press. 8vo. 12s. 6d. 825

The recognition of the importance of the trace elements as essential micro-nutrients for the higher plants and animals has been a development of the past 25 years, during which time an ever increasing literature has appeared. Although there have been numerous reviews of trace elements from both the plant and the animal aspects, there has been lacking a comprehensive text-book on the subject. The author presents "a digest of this information so that the salient facts may be available in convenient form and the present position of our knowledge of trace elements in living organisms made plain". The task has been herculean as the literature on plants alone is really immense, and that on the animal side whilst not up to the present as voluminous, is perhaps diffused over a much wider range of journals. In such circumstances the responsibility of a single author to collect the necessary information, select the salient points and condense them into less than 200 pages has been a very heavy one if the final result is to be a really accurate and objective presentation of the topic.

The work is divided into six chapters:—historical introduction; methods of investigating micro-nutrient problems; trace element deficiency diseases of plants; the function of trace elements in plants; trace elements in animals and concluding remarks. Readers of the *Veterinary Bulletin* will no doubt be principally interested in chapter V where the elements considered are Se, Mo, Cu, I, Mn and Co with very short observations on the functions of trace elements in animal; no mention is made of F with its very voluminous literature

and reference to Zn is brief. This section might have been expanded.

The role of trace elements in problems of animal physiology and animal health is very important.

The reviewer feels that in future editions of the book the subject of trace elements in animals should be dealt with in a more comprehensive manner. Active work on the subject has been in progress in several laboratories in the United Kingdom, in certain of the British Dominions and Colonies as well as in America and their results merit due consideration in such a book.—A. EDEN.

JUNQUEIRA, L. C. U., & MARTINS, E. O. (1947.) **Atlas de anatomia microscopica do rato. [Atlas of microscopical anatomy in rats.]** pp. 142. Brazil: Universidade de São Paulo. 826

This is a monograph on the histology of the rat (*Rattus norvegicus* and *Rattus rattus*), written chiefly for the general laboratory worker. Details are given of the technique employed. The histology of the various organs and systems is described *seriatim*, but the nervous system is omitted. It will be of considerable use to a wide range of laboratory workers and is well produced on good quality paper. There are numerous well reproduced photomicrographs and illustrations. Thirty pages of references accompany the work.

—F. A. ESTEVES.

AINSWORTH, G. C. [B.Sc., Ph.D.], & BISBY, G. R. [M.A., Ph.D.]. (1945.) **A dictionary of the fungi.** pp. viii + 431. 138 figs. Kew, Surrey: The Imperial Mycological Institute. 8vo. 2nd Edit. 20s. or \$4.60. 827

This second edition is very welcome. It is a most important reference book on its subject. It was originally planned as an aid to university students in the study of fungi, but ultimately developed into a standard book for mycologists and, it may be added, for a much wider range of scientists who make occasional excursions into that subject.

The chief changes and additions in the second edition are the listing of new genera, a new arrangement of the Phycomycetes, a Systematic Arrangement of the genera (pp. 346–393), short notes on important mycologists, and a key to the Families of the Fungi.

An example of the need for such a reference book is the fact that it contains 7,405 generic names, 3,705 "good" and 3,700 that are synonyms or of uncertain value.

The printing and binding are excellent.

—F. A. ESTEVES.

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